

DRAFT

**INITIAL STUDY
MITIGATED NEGATIVE DECLARATION**

**Mill Creek Watershed Young Forest Restoration Plan,
Del Norte Coast Redwoods State Park**

July 8, 2011



State of California
DEPARTMENT OF PARKS AND RECREATION

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DEPARTMENT OF PARKS AND RECREATION

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PROJECT: Mill Creek Watershed Young Forest Restoration Plan

LEAD AGENCY: California Department of Parks and Recreation

AVAILABILITY OF DOCUMENTS: This Initial Study/Mitigated Negative Declaration is available for review at:

California Department of Parks and Recreation
Northern Service Center
One Capitol Mall – Suite 410
Sacramento, CA 95814

California Department of Parks and Recreation
North Coast Redwoods District
3431 Fort Avenue
Eureka, CA 95503

California Department of Parks and Recreation
1111 Second St
Crescent City, CA 95531

Del Norte County Library
190 Prince Mall
Crescent City, CA 95531

California Department of Parks and Recreation Internet Website.
http://parks.ca.gov/default.asp?page_id=980

PROJECT DESCRIPTION:

The Department of Parks and Recreation proposes to restore young forests (11-24 years old) by mechanically thinning (using chainsaws) approximately 941 hectares (2,325 acres) of formerly harvested stands to promote historic species composition, encourage rapid tree growth, and accelerate the development of late-seral forest characteristics. The project is located in the Mill Creek Watershed of Del Norte Coast Redwoods State Park. A minimum of 185 trees per hectare (tph) (75 trees per acre (tpa)) will be retained after restoration and most stands will have at least 370 tph (150 tpa) retained. Prescriptions may be modified when necessary to protect sensitive resources such as rare plants or animals, wetland habitats, cultural resources, and geologically unstable areas.

A copy of the Initial Study is incorporated into this Mitigated Negative Declaration. Questions or comments regarding this Initial Study/Mitigated Negative Declaration should be addressed to:

John E. Harris
Senior Environmental Scientist
California Department of Parks and Recreation
North Coast Redwoods District
P.O. Box 2006
Eureka, CA 95502-2006

Pursuant to Section 21082.1 of the California Environmental Quality Act, the California Department of Parks and Recreation (DPR) has independently reviewed and analyzed the Initial Study and Mitigated Negative Declaration for the proposed project and finds that these documents reflect the independent judgment of DPR. DPR, as lead agency, also confirms that the project mitigation measures detailed in these documents are feasible and will be implemented as stated in the Mitigated Negative Declaration.

 02/02/12

John E. Harris Date
District Environmental Coordinator/Senior Environmental Scientist

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CHAPTER 1 – INTRODUCTION

1.1 INTRODUCTION AND REGULATORY GUIDANCE

The Initial Study/Mitigated Negative Declaration (IS/MND) has been prepared by the California Department of Parks and Recreation (DPR) to evaluate the potential environmental effects of the proposed Mill Creek Watershed Young Forest Restoration Project (hereafter referred to as the Young Forest Restoration project) at the Del Norte Coast Redwoods State Park (DNCRSP), Humboldt County, California. This document has been prepared in accordance with the California Environmental Quality Act (CEQA), Public Resources Code §21000 et seq., and the State CEQA Guidelines, California Code of Regulations (CCR) §15000 et seq.

An Initial Study is conducted by a lead agency to determine if a project may have a significant effect on the environment [CEQA Guidelines §15063(a)]. If there is substantial evidence that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) must be prepared, in accordance with CEQA Guidelines §15064(a). However, if the lead agency determines that revisions in the project plans or proposals made by or agreed to by the applicant mitigate the potentially significant effects to a less-than-significant level, a Mitigated Negative Declaration (MND) may be prepared instead of an EIR [CEQA Guidelines §15070(b)]. The lead agency prepares a written statement describing the reasons a proposed project would not have a significant effect on the environment and, therefore, why an EIR need not be prepared. This IS/MND conforms to the content requirements under CEQA Guidelines §15071.

1.2 LEAD AGENCY

The lead agency is the public agency with primary approval authority over the proposed project. In accordance with CEQA Guidelines §15051(b) (1), "the lead agency will normally be an agency with general governmental powers, such as a city or county, rather than an agency with a single or limited purpose." The lead agency for the proposed project is the Department of Parks and Recreation (DPR). The contact person for the lead agency is:

John E. Harris
District Environmental Coordinator
California Department of Parks and Recreation
North Coast Redwoods District
P.O. Box 2006
Eureka, CA 95502
Phone: 707-445-6547 ext. 19

1.3 PURPOSE AND DOCUMENT ORGANIZATION

The purpose of this document is to evaluate the potential environmental effects of the proposed Young Forest Restoration project in DNCRSP. Mitigation measures have also been incorporated into the project to eliminate any potentially significant adverse impacts or reduce them to a less-than-significant level.

This document is organized as follows:

Chapter 1 - Introduction

This chapter is an introduction to the project and describes the purpose and organization of this document.

Chapter 2 - Project Description

This chapter describes the reasons for the project, scope of the project, and project objectives.

Chapter 3 - Environmental Setting, Impacts, and Mitigation Measures

This chapter identifies the significance of potential environmental impacts, explains the environmental setting for each environmental issue, and evaluates the potential impacts identified in the CEQA Environmental (Initial Study) Checklist. Mitigation measures are incorporated, where appropriate, to reduce potentially significant impacts to a less than significant level.

Chapter 4 – Mandatory Findings of Significance

This chapter identifies and summarizes the overall significance of any potential impacts to the natural and cultural resources, cumulative impacts and impacts to humans, as identified in the Initial Study.

Chapter 5 - Summary of Mitigation Measures

This chapter summarizes the mitigation measures incorporated into the project from the Initial Study.

Chapter 6 - Summary of Monitoring

This chapter describes the monitoring that will be used to ensure that all mitigation measures are implemented as planned during project construction.

Chapter 7 - References

This chapter identifies the references and sources used in the preparation of this IS/MND.

Chapter 8 - Report Preparation

This chapter includes a list of report preparers.

1.4 SUMMARY OF FINDINGS

Chapter 3 of this document contains the Environmental (Initial Study) Checklist that identifies the potential environmental impacts (by environmental issue) and a brief discussion of each impact resulting from implementation of the proposed project.

Based on the Environmental Checklist and the supporting environmental analysis provided in this document, the proposed Young Forest Restoration Project would result in less than significant impacts for the following issues: aesthetics, agricultural resources, air quality, biological resources, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, land use and planning, mineral resources, noise, population and housing, public services, recreation, transportation/traffic, and utilities and service systems, and cumulative impacts.

In accordance with §15064(f) of the CEQA Guidelines, a MND shall be prepared if the proposed project would not have a significant effect on the environment after the inclusion of mitigation measures in the project. Based on the available project information and the environmental analysis presented in this document, there is no substantial evidence that, after the incorporation of mitigation measures, the proposed project would have a significant effect on the environment. It is proposed that a Mitigated Negative Declaration be adopted in accordance with the CEQA Guidelines.

CHAPTER 2 – PROJECT DESCRIPTION

2.1 INTRODUCTION

This Initial Study/Mitigated Negative Declaration (IS/MIND) has been prepared by the DPR to evaluate the potential environmental effects of the proposed Young Forest Restoration Project (see Appendix D – Restoration Plan) in the portion of Del Norte Coast Redwoods State Park commonly referred to as the Mill Creek Watershed (MCW). DPR proposes to mechanically thin (using chainsaws) approximately 941 ha (2,325 ac) of formerly harvested stands over the next approximate five to seven years to promote historic species composition, encourage rapid tree growth, and accelerate the development of late-seral forest characteristics. Resulting stands are expected to grow faster, remain healthier and develop fire resistant traits more rapidly than if left untreated.

2.2 PROJECT LOCATION

The project is located within the North Coast Redwoods District (NCRD) of California State Parks (Figures 1-5, Appendix A). The MCW is located in the coastal mountains of northwestern Del Norte County, approximately 8 km (5 mi) southeast of Crescent City and is the eastern-most portion of DNCRSP. The project will incorporate work sites spread throughout the 10,118 ha (25,000 ac) of the MCW.

The proposed work will take place in Rock Creek and Mill Creek watersheds, which drain into the Smith River; Wilson Creek watershed, which drains into the Pacific Ocean; and Hunter Creek and Turwar Creek watersheds, which drain into the Klamath River. The legal description for the project area is (T 15 N, R 1 W, Section 1; T 15 N, R 1 E Sections 1, 2, 3, 4, 5, 6, 7,8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 35, 36; T 15 N, R 2 E, Sections 7, 18, 19, 30, 31; T 16 N, R 1 W, Section 36; and T 16 N, R 1 E, Sections 26, 27, 28, 29, 31, 32, 33, 34, 35, 36, Humboldt Meridian) USGS 7.5' Child's Hill, CA and Hiouchi, CA quadrangles. Access to the proposed action from Eureka is via Highway 101 north. The main access to the sites, Hamilton Road, is located 3 km (2 mi) north of the Mill Creek Campground on Highway 101. Specific treatment areas can be seen in Figures 1-5 (Appendix A) and can be viewed in relation to other projects (Figure 6, Appendix A) and hazards in the Restoration Plan (Appendix D).

2.3 BACKGROUND AND NEED FOR THE PROJECT

The MCW has experienced commercial logging operations since the early part of the 20th century and was intensively managed for timber production from the 1950's until the Save-the-Redwoods League facilitated the property's transfer to DPR in June of 2002. By that time, almost the entire property had been converted from old-growth to young coniferous forests. There are about 40 ha (100 ac) of old-growth redwood and Douglas-fir forests remaining in the MCW today. The State Parks primary goal for the forested areas is to accelerate the restoration of late-seral characteristics to the second-growth forests. The resulting conditions will more closely resemble the conditions

present prior to European settlement of the area and will better serve the wildlife that naturally occur in the area.

The General Plan for DNCRSP (amended in 2011) identifies the need to assess the conditions of the youngest stands - areas planted from 1994-2000 - in order to determine which areas need treatment to maintain optimal growth and to prioritize areas for treatment. California State Parks (CSP) used records obtained from the former landowner – Stimson Timber Company – to identify stands in this age class. Remote sensing data derived from satellite imagery and a canopy height model created from a 2007 LiDAR flight was used to look for errors in the records and ensure all stands in this age class were considered for treatment. All areas identified in this process were then visited to determine if they were forested or naturally open chaparral habitat. Over 700 points were systematically placed over the forested stands. All points were surveyed using variable and fixed radius plots.

Survey results of trees over 4 cm (1.5 inch) diameter at breast height (dbh) show that 93 stands totaling 915 ha (2,261 ac) have over 202 tph (500 tpa). Old-growth redwood forests by comparison average around 13 tph (32 tpa) (Guisti 2004). The trees in stands with over 202 tph (500 tpa) have (or will shortly) form closed canopies and will lose a large portion of their crown foliage to shading from neighboring trees. As the crowns of these trees shrink so does their ability to grow quickly even if more resources are made available by removing competing vegetation. Untreated stands may even stagnate and forest health could be compromised. By failing to manage these forests immediately, managers may slow the growth of all trees and delay the development of late-seral conditions by decades. Failure to restore these stands may also subject them and the MCW to catastrophic fire events.

2.4 PROJECT OBJECTIVES

The primary objective of the proposed project is to protect Park resources by promoting forest health and to accelerate the development of old forest characteristics (late-seral) in formerly harvested stands. Within this framework, there are three major objectives:

- Accelerate growth and crown vigor of selected trees.
- Develop fire resistant traits of large conifers.
- Adjust species composition to promote historic species mix.

The project is also consistent with the CSP mission and its management directives aimed at preserving the state's extraordinary biological diversity and protecting its most valued natural resources.

2.5 PROJECT DESCRIPTION

California State Parks proposes to conduct forest restoration of approximately 941 hectares (2,325 ac) of formerly harvested areas by mechanically thinning (using chainsaws) the stands. The intent of the restoration is to accelerate the trajectory of the previously harvested stands to a late-seral condition that more closely resembles an old growth forest. The proposed forest restoration will promote species composition change as well as structural change that together favors the development of improved

habitat for native flora and fauna, increased soil stability, and reduced slope/water temperatures.

This project proposes to reduce tree densities within the 915 ha (2,261 ac) of forest that survey results show have more than 202 tph (500 tpa). There are an additional 26 ha (63 ac) where competing brush threatens to reduce tree densities below levels necessary for the rapid development of late-seral characteristics. This project proposes to cut brush to in order to release these trees in these 26 ha (63 ac). A map of all stands to be treated (Figure 6, Appendix A) will be compared to the road decommissioning schedule to help choose which stands are treated in a given year. Stands will then be chosen for thinning each year based on if and when access would become more difficult, how much access would be affected, the number of trees per hectare within each stand, and the stand's overall degree of impairment. Additional factors such as connectivity, condition of adjacent stands, and the percentage a given subwatershed treated within a 3-5 year period will also be considered.

Smaller trees that are restricting the growth of neighboring "larger" coniferous trees will be thinned. The selection of trees to remain will be based on the appropriate species for the site and the size and health of the tree. The largest, healthiest trees of the appropriate species for the site will be retained while the smaller trees (of species that are more abundant than prior to harvesting) are more likely to be cut.

Prescriptions will generally leave fewer trees than a pre-commercial thinning that might be conducted on an industrial forest of similar conditions. The lower residual tree density will allow retained trees to grow rapidly for a longer period before competition from neighboring trees impedes growth. A minimum of 185 tph (75 tpa) will be retained after treatment and most stands will have at least 370 tph (150 tpa) retained. No trees larger than 38 cm (15 inch) diameter at breast height (DBH) will be cut. The spacing between trees will also be more variable than under more traditional precommercial thins and therefore better able to promote diversity and the relatively rapid development of late-seral conditions (Carey 2003, Carey et al. 1999, O'Hara et al. 2010).

2.6 PROJECT IMPLEMENTATION

Crews using chain saws will carry out thinning operations on competing vegetation. Work will occur during the dry season (July 1 – Oct 15) or into the fall if dry conditions persist. Operations will cease before soils become sufficiently saturated to cause damage to soil structure, rutting on dirt roads by vehicular traffic or a turbidity increase into drainages that lead to Class I, II, III or IV waters as defined by the California Forest Practice Rules (CCR 14). Trees and other vegetation cut from within 0 – 15 m (50 ft) of roads that will remain drivable may be chipped or removed from this strip to reduce fire danger. No heavy equipment will be allowed off existing roads, but winches may be used to pull trees (whole trees to minimize disturbance) to roads for chipping and large equipment (such as an excavator with a masticator head) may be used to chip fuels but will not be allowed to travel off existing roads. No trees larger than 38 cm (15 inch) dbh will be cut.

2.7 VISITATION

DNCRSP is open all year for day use and generally has camping available from May 1 to September 30, however DNCRSP is on the Park Closure List announced on May 13, 2011, therefore visitation may be limited or prohibited after September 2011. Portions of the Mill Creek Watershed are currently open to visitors on weekends during daylight hours. Annual visitor attendance at DNCRSP is presented in Table 2.7.1.

Table 2.7.1. Annual visitor attendance at Del Norte Coast Redwood State Park.

*Fiscal Year	Paid Day Use	Free Day Use	Overnight Camping	Total Attendance
2001-2002	456	26,125	33,858	60,439
2002-2003	417	45,229	32,575	78,221
2003-2004	0	78,175	34,721	112,896
2004-2005	115	60,066	35,780	95,961
2005-2006	225	52,656	26,740	79,650
2006-2007	255	38,551	21,726	60,532
2007-2008	81	77,923	37,192	115,196
2008-2009	139	59,899	34,213	94,251
2009-2010	249	14,316	28,765	43,330
Total Attendance	1937	452,940	285,570	740,476
Average Yearly Attendance	215	50,327	31,730	82,275

* Data obtained from the DPR Attendance Database

Public access to the MCW is restricted due to safety concerns with the road system and abandoned industrial buildings, a lack of facilities to accommodate visitors, and the limited availability of rangers and visitor services staff. The Department's long-term goals for the property include obtaining funding to develop facilities, and increase staffing to expand public access. Visitation is currently allowed on weekends during daylight hours and for approved research and resource management purposes.

2.8 CONSISTENCY WITH LOCAL PLANS AND POLICIES

The proposed restoration plan is consistent with the mission of CSP *"To provide for the health, inspiration and education of the people of California by helping to preserve the state's extraordinary biological diversity, protecting its most valued natural and cultural resources, and creating opportunities for high quality outdoor recreation."*

The proposed restoration is also consistent with the management plan for the Park (Redwood National and State Parks General Management Plan) and the 2011 amendment that is specific to the Mill Creek Watershed.

2.9 DISCRETIONARY APPROVALS

California State Parks will perform all necessary reviews and acquire all permits necessary prior to implementing any project component that may require regulatory review.

California State Parks retains approval authority for the proposed Mill Creek Watershed Young Forest Restoration Project within DNCRSP. The project meets goals presented in the General Plan (amended 2011),

The project requires additional approval or permits from the following government agencies:

- Regional Water Quality Control Board (Clean Water Act Section 401 Water Quality Certification).
- U.S. Fish and Wildlife Service - Prior to operations, a letter of Technical Assistance will be obtained from the USFWS, identifying any operating restrictions for the northern spotted owl or the marbled murrelet.
- California Department of Fish and Game – Consultation will be initiated prior to operations that may affect the marbled murrelet.

California State Parks will acquire all necessary reviews and permits prior to implementing any project components requiring regulatory review.

2.10 RELATED PROJECTS

California State Parks has other natural resource restoration projects underway and/or planned for the Park (Figure 6, Appendix A). The following projects are currently underway or proposed in the near future in vicinity of the proposed project area:

From 2003-2010, CSP treated approximately 1,315 ha (3,250 ac) of young forests within the MCW and will treat approximately 121 (300) additional hectares (acres) in 2011. These areas were planted between 1980 and 1993. This project seeks to continue the same type of work in the younger age class and to treat additional stands in the 1980-1993 age class.

From 2004-2011, CSP removed and recontoured approximately 79 kilometers (49 miles) of undriveable and failing logging roads within the MCW to prevent future catastrophic erosion and improve wildlife habitat and the aesthetic quality of the watershed. A similar amount may be removed and recontoured in coming years as funding allows.

California State Parks is in the process of restoring the East Fork Mill Creek. The creek was channelized in places and virtually all large wood was removed from the system under previous ownership. This simplification of the stream and riparian areas has severely degraded habitat for coho salmon and other endemic wildlife. Since 2006, State Parks has begun to restore complexity and improve habitat by building

approximately 24 complex wood jams that resemble natural log jams along the East Fork. In the summer/fall of 2011, approximately 70 more structures will be installed in the East Fork and its tributaries. In approximately 3 years, similar structures may be built along the West Branch as funding allows. It is anticipated that these structures will need to be augmented with additional wood for at least the next 100 years until the adjacent riparian forests mature enough to provide natural wood recruitment to the stream channel.

Over 10,000 native conifers have been planted in historically conifer dominated stands that were converted to alder stands due to past harvest history. These areas are all adjacent to East Fork and West Branch of Mill Creek.

CHAPTER 3 – ENVIRONMENTAL CHECKLIST

PROJECT INFORMATION	
1.	Project Title: Mill Creek Watershed Young Forest Restoration Project
2.	Lead Agency Name & Address: California Department of Parks & Recreation
3.	Contact Person & Phone Number: John E. Harris (707) 445-6547 x19
4.	Project Location: Del Norte Coast Redwoods State Park
5.	Project Sponsor & Address: California Department of Parks & Recreation North Coast Redwoods District 3431 Fort Ave. Eureka, CA 95503
6.	General Plan Designation: State Park
7.	Description of Project: The Department of Parks and Recreation proposes to restore young forests (11-24 years old) by mechanically thinning (using chainsaws) approximately 941 hectares (2,325 acres) of formerly harvested stands to promote historic species composition, encourage rapid tree growth, and accelerate the development of late-seral forest characteristics. The project is located in the Mill Creek Watershed of Del Norte Coast Redwoods State Park. A minimum of 185 trees per hectare (tph) [75 trees per acre (tpa)] will be retained after restoration and most stands will have at least 370 tph (150 tpa) retained. Prescriptions may be modified when necessary to protect sensitive resources such as rare plants or animals, wetland habitats, cultural resources, and geologically unstable areas.
8.	Surrounding Land Use & Setting: Refer to Chapter 3 of this Document (Section IX, Land Use Planning)
9.	Approval Required from Other Public Agencies: Refer to Chapter 2 of this document (Section 2.9 Discretionary Approvals)

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

If implemented as written, this project could result in a "Potentially Significant Impact" involving at least one area of the environmental factors checked below, as indicated in the Initial Study on the following pages.

- | | | |
|--|---|---|
| <input type="checkbox"/> Aesthetics | <input type="checkbox"/> Agricultural Resources | <input type="checkbox"/> Air Quality |
| <input type="checkbox"/> Biological Resources | <input type="checkbox"/> Cultural Resources | <input type="checkbox"/> Geology/Soils |
| <input type="checkbox"/> Hazards & Hazardous Materials | <input type="checkbox"/> Hydrology/Water Quality | <input type="checkbox"/> Land Use/Planning |
| <input type="checkbox"/> Mineral Resources | <input type="checkbox"/> Noise | <input type="checkbox"/> Population/Housing |
| <input type="checkbox"/> Public Services | <input type="checkbox"/> Recreation | <input type="checkbox"/> Transportation/Traffic |
| <input type="checkbox"/> Utilities & Service Systems | <input type="checkbox"/> Mandatory Findings of Significance | <input checked="" type="checkbox"/> None |

DETERMINATION

On the basis of this initial evaluation:

I find that the proposed project COULD NOT have a significant effect on the environment and a NEGATIVE DECLARATION will be prepared.

I find that although the original scope of the proposed project COULD have had a significant effect on the environment, there WILL NOT be a significant effect because revisions/mitigations to the project have been made by or agreed to by the applicant. A MITIGATED NEGATIVE DECLARATION will be prepared.

I find that the proposed project MAY have a significant effect on the environment and an ENVIRONMENTAL IMPACT REPORT or its functional equivalent will be prepared.

I find that the proposed project may have a "potentially significant impact" or "potentially significant unless mitigated impact" on the environment. However, at least one impact has been adequately analyzed in an earlier document, pursuant to applicable legal standards, and has been addressed by mitigation measures based on the earlier analysis as described in the report's attachments. An ENVIRONMENTAL IMPACT REPORT is required, but it will analyze only the impacts not sufficiently addressed in previous documents.

I find that although the proposed project could have had a significant effect on the environment, all potentially significant effects have been adequately analyzed in an earlier EIR or Negative Declaration, pursuant to applicable standards, and have been avoided or mitigated, pursuant to an earlier EIR, including revisions or mitigation measures that are imposed upon the proposed project. Therefore, all impacts have been avoided or mitigated to a less-than-significant level and no further action is required.

John E. Harris  02/02/12 Date

District Environmental Coordinator

EVALUATION OF ENVIRONMENTAL IMPACTS

1. A brief explanation is required for all answers, except “No Impact”, that are adequately supported by the information sources cited. A “No Impact” answer is adequately supported if the referenced information sources show that the impact does not apply to the project being evaluated (e.g. the project fall outside a fault rupture zone). A “No Impact” answer should be explained where it is based on general or project specific factors (e.g. the project will not expose sensitive receptors to pollutants, based on a project specific screening analysis).
2. All answers must consider the whole of the project related effects, both direct and indirect, including off-site, cumulative, construction, and operational impacts.
3. Once the lead agency has determined that a particular physical impact may occur, the checklist answers must indicate whether that impact is potentially significant, less than significant with mitigation, or less than significant. “Potentially Significant Impact” is appropriate when there is sufficient evidence that a substantial or potentially substantial adverse change may occur in any of the physical conditions within the area affected by the project that cannot be mitigated below a level of significance. If there are one or more “Potentially Significant Impact” entries, an Environmental Impact Report (EIR) is required.
4. A “Mitigated Negative Declaration” (Negative Declaration: Less Than Significant with Mitigation Incorporated) applies where the incorporation of mitigation measures, prior to declaration of project approval, has reduced an effect from “Potentially Significant Impact” to a “Less Than Significant Impact with Mitigation”. The lead agency must describe the mitigation measures and briefly explain how they reduce the effect to a less than significant level.
5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier IER (including a General Plan) or Negative Declaration [CCR Guidelines for the Implementation of CEQA, §15063(c)(3)(D)]. References to an earlier analysis should:
 - a) Identify the earlier analysis and state where it is available for review.
 - b) Indicate which effects from the environmental checklist were adequately analyzed in the earlier document, pursuant to applicable legal standards, and whether these effects were adequately addressed by mitigation measures included in that analysis.
 - c) Describe the mitigation measures in this document that were incorporated or refined from the earlier document and indicate to what extent they address site-specific conditions for this project.
6. Lead agencies are encouraged to incorporate references to information sources for potential impacts into the checklist or appendix (e.g. general plans, zoning ordinances, biological assessments). References to a previously prepared or outside document should include an indication of the page or pages where the statement is substantiated.
7. A source list should be appended to this document. Sources used or individuals contacted should be listed in the source list and cited in the discussion.
8. Explanation(s) of each issue should identify:
 - a) the criteria or threshold, if any, used to evaluate the significance of the impact addressed by each question **and**
 - b) the mitigation measures, if any, prescribed to reduce the impact below the level of significance.

I. AESTHETICS

ENVIRONMENTAL SETTING

The MCW lies within the coastal mountains of northwestern Del Norte County and was managed as a commercial timber property for more than a century. The property is covered with even-aged coniferous forests and has a dense network of timber hauling roads. Numerous recent clearcuts are still visible within and surrounding the project area. Road scars are ubiquitous and dissect all the subwatersheds within the watershed. Numerous road-related landslides are visible within the project area.

The treatment area of the proposed project is located throughout the MCW that was added to the Park in 2002. The Park is approximately 5 miles southeast of Crescent City, California.

The proposed restoration is intended to enhance, among other values, the long-term aesthetic quality of the MCW by facilitating the redevelopment of old-growth forests. Adjacent reserves (i.e. Jedediah Smith Redwoods State Park and other portions of DNCRSP) provide a good approximation of the visual characteristics of old-growth, the most striking of which of course is the presence of large diameter, widely spaced redwood trees (Giusti 2004). The visual qualities of old-growth redwood forests are accentuated by a diverse understory of one or more native plant species including rhododendron (*Rhododendron macrophyllum*), California huckleberry (*Vaccinium ovatum*), western sword fern (*Polystichum munitum*) and salmon berry (*Rubus spectabilis*) (Mahony and Stuart 2000). The core project objectives related to accelerating growth rates and adjusting species composition will, in time, facilitate the redevelopment of large, widely spaced trees and a diverse understory. Spaces between trees and decomposing slash will be visible in the near term (5 – 10 years) following the thinning treatments and the overstory canopy cover will rapidly re-attain near 100% closure.

Would the project	Potentially Significant Impact	Less than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

DISCUSSION

- a) The work will be located within forested areas that are, in some cases, visible from scenic vistas that have been identified in the GPA but have not been developed. Given the current fiscal condition of the state and the probability of park closure in July 2012, it is unlikely that these vistas will be developed in the lifetime of this restoration plan. The view of the project areas would be from an oblique angle and tree densities will be high enough (185 tph (75 tpa) minimum) that the change will be difficult to see from any scenic vista. Minimal open space between trees and dead trees cut on the ground will be partially visible for a few years before the canopy closes sufficiently to make the change undetectable from any scenic vista.

A lodge and several backcountry cabins/campsites may be located within the project area, but the precise location of these structures has not been determined. These sites are also unlikely to be developed within the life of this plan, but if they are, additional modifications to these areas may be necessary to develop the sites and maintain vistas. By cutting vegetation around the proposed development areas, the project will, in the short term improve vistas, but they will slowly be lost to growing vegetation regardless of this project. Less than significant impact.

- b) The proposed project area is not within a state scenic highway and no scenic resources will be damaged. No impact.
- c) The proposed project may temporarily decrease in the visual appeal of the project area, however within a few years the project should result in improvements to the scenic resource by increasing the vigor, stability, and competitive position of existing trees. The duration of any noticeable changes resulting from related activities would be a temporary impact, limited to approximately 2-10 years. Less than significant impact.
- d) The project will not create glare because all larger trees, which moderate light intensities and provide shade to the site will be preserved within the treatment area. Lighting is not an element of this project and no new light sources will be introduced into the landscape. All restoration work will be limited to daylight hours, eliminating the need for work lights. This project will not create any new sources of light or glare. No impact.

II. AGRICULTURAL RESOURCES

ENVIRONMENTAL SETTING

The MCW which is within Del Norte Coast Redwoods State Park is part of the California State Park System. The land is zoned park land in Del Norte County. Commercial timber operations were discontinued as part of the transition of the property from private timber holdings to public parkland in 2002. The adjoining land to the east and south of the MCW is Six Rivers National Forest and commercial timberland, respectively. Land to the north and west of the MCW is adjacent portions of DNCRSP, Redwood National Park, and Jedediah Smith Redwoods State Park. The Williamson Act does not apply to any lands within the project area because it is all public, CSP land.

Would the project	Potentially Significant Impact	Less than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Convert prime farmland, unique farmland, or farmland of statewide importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the Calif. Resources Agency, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with existing zoning for agricultural use or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

*In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997), prepared by the California Department of Conservation as an optional model for use in assessing impacts on agricultural and farmland.

DISCUSSION

- a) No land within the vicinity of the project site is zoned as agricultural land or used for agricultural purposes, as defined by the Farmland Mapping and Monitoring Program. Therefore, this project would have no effect on any category of California farmland, conflict with any existing zoning for agricultural use or Williamson Act contract, or result in the conversion of Farmland to non-agricultural use. No impact.
- b) As noted in the Environmental Setting above, the MCW is part of the California State Park System and does not support any agricultural operations or farmland. No impact.

- c) DPR policies and practices, deed restrictions, and other constraints related to acquisition of designated agricultural lands and the impacts of continued agricultural use on the Park's operational and resource management needs, do not allow for agricultural uses in DNCRSP. No impact.

III. AIR QUALITY

ENVIRONMENTAL SETTING

The project site is in Del Norte County, which is part of the North Coast Air Basin and is under the jurisdiction of the North Coast Unified Air Quality management District (NCUAQMD) and the U.S. Environmental Protection Agency (EPA) Region IX. Humboldt, Trinity, and Del Norte counties all fall under the regional jurisdiction of the NCUAQMD, whose main purpose is to enforce local, state, and federal air quality laws and regulations. The California Air Resources Board tracks attainment or air quality standards (established by both EPA and NCUAQMD) for basins throughout the State. Attainment status for Del Norte County and the North Coast Basin is described below and summarized in Table 3.3.1.

An area is designated in attainment if the state standard for the specified pollutant was not violated at any site during a three-year period. Del Norte County is currently in attainment with all California standards including carbon monoxide, hydrogen sulfide, lead, ozone, nitrogen dioxide, sulfur dioxide, and sulfides.

The NCUAQMD is in non-attainment with California standards for particulate matter (PM 10 or particles with an aerodynamic diameter of 10 microns or less). The major sources of PM 10 are combustion (e.g. wood smoke, emissions from industry, automobiles, and diesel engines) and dust (e.g. airborne soil, road dust caused by vehicle travel). An area is designated in non-attainment if there was at least one violation of a state standard for the specified pollutant within the area boundaries. With respect to Federal standards, the North Coast Air Basin is in attainment of all Federal standards and is undetermined for PM 2.5 pollutants.

Table 3.3.1. North Coast Air Basin Attainment Status

Pollutant	Averaging Time	State Status	National Status
Inhalable particulate matter	24-hr Annual	Non-Attainment	Attainment
Fine particulate matter	24-hr Annual	Unclassified	Unclassified/Attainment
Ozone	1-hr.	Attainment	No federal standard
	8 hr.	No state standard	Unclassified/Attainment
Carbon monoxide	1-hr. and 8 hr.	Unclassified	Unclassified/Attainment
Nitrogen-dioxide	1-hr. and Annual	Attainment	Unclassified/Attainment
Sulfur dioxide	24-hr. Annual	Attainment	Unclassified

Would the project	Potentially Significant Impact	Less than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan or regulation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Expose sensitive receptors to substantial pollutant concentrations (e.g. children, the elderly, individuals with compromised respiratory or immune systems)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Create objectionable odors affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

DISCUSSION

- a) Work proposed in this project would not be in conflict with or would not obstruct implementation of any applicable air quality plan for Del Norte County, the North Coast Air Basin, PCRSPQMD, or USEPA Region IX. No impact.
- b) The proposed project will not emit air contaminants at a level that, by themselves, will violate any air quality standard, or contribute to a permanent or long-term increase in any air contaminant. The organic material generated during this project would not be burned. No diesel portable equipment would be used during the project. However, restoration work will generate short-term emissions of fugitive dust (PM10) and involve the use of equipment and materials that may emit ozone precursors (i.e., reactive organic gases [ROG] and nitrogen oxides, or NOx). Increased emissions of PM10, ROG, and NOx could contribute to existing non-attainment of PM10 conditions and interfere with achieving the projected attainment standards. Best management practices that have been incorporated into the project design include: 1) requiring all gasoline-powered equipment to be maintained in good mechanical condition (according to manufacturer's specifications), and in compliance with all State and federal requirements; 2) the suspension of mechanized removal of downed material when sustained winds exceed 25 mph, instantaneous gusts exceed 35 mph, or when dust from construction might obscure

driver visibility on public roads; and 3) traffic speed on unpaved roads will be limited to 15 miles per hour (mph) (Appendix D). These measures will minimize any impact to air quality to a level of less than significant.

- c) See (b) above. Incorporation of best management practices would reduce impacts to a less than significant level.
- d) The project is not located near sensitive receptors (Joe Hamilton elementary school is over 6 Km (4 miles) away) and therefore will not expose sensitive receptors to substantial pollutant concentrations. Any equipment use that could generate fugitive dust would be of limited duration, both in daily operation and as a percentage of the proposed work for this project. The project area would be closed to the public and work would occur during daylight hours. These conditions, combined with full implementation of the best management practices described in a) above, will result in a less than significant impact.
- e) The proposed work would not result in the long-term generation of odors. Construction related emissions could result in a short-term generation of odors, including fuel or solvent vapors. However, because construction activities would be short-term, odorous emissions would be limited and dissipate rapidly in the air with increased distance from the source. Less than significant impact.

IV. BIOLOGICAL RESOURCES

ENVIRONMENTAL SETTING

Plants

At least 15 vegetation series (Sawyer and Keeler-Wolf 1995) are present on the MCW according to the Mill Creek Property Interim Management Recommendations prepared by Stillwater Associates (2002), which is the source of information for this section. Vascular plant species diversity is high with possibly over 300 species present. The following tree-dominated vegetation series are found on the property (listed in the order of their abundance): Redwood, Red Alder, Western White Pine, Knobcone Pine, Sitka Spruce, and Jeffrey Pine. Herbaceous-plant dominated series on the property include Bulrush, Bulrush-Cattail, California Annual Grassland, Introduced Perennial Grass, and Pampas grass. Shrub-dominated series include the Blue Blossom and Huckleberry Oak series. Other series present include the Darlingtonia and Fen series.

The coastal fog belt provides good growing conditions for fast-growing conifers such as the coast redwood (*Sequoia sempervirens*). Douglas-fir (*Pseudotsuga menziesii*) is found in association with redwoods, particularly in the eastern portion of the property, where coastal influence is diminished. Sitka spruce (*Picea sitchensis*), grand fir (*Abies grandis*), western hemlock (*Tsuga heterophylla*), western redcedar (*Thuja plicata*), Port-Orford-cedar (*Chamaecyparis lawsoniana*), red alder (*Alnus rubra*), and tan oak (*Lithocarpus densiflorus*) are found as minor components of the coastal forest on the property. Past management of the property has resulted in primarily even-aged, monospecific forest stands of various ages.

The composition of riparian stands along fish-bearing streams on the property differs depending on whether the stands border high-gradient, confined channels or lower-gradient, less-confined channels. Riparian communities along high-gradient, confined channels are currently dominated by sapling or multi-layered stands <50 years old. Most stands along these channels consist of pole-size, second-growth trees, with trees >24 in dbh accounting for less than 25% of the canopy cover.

Hardwoods, particularly red alder and big-leaf maple (*Acer macrophyllum*), are an important component of riparian stands along the lower-gradient, less-confined channels found in the Watershed. Forty-nine percent of the riparian area along low gradient channels consists of hardwoods, with most of these stands being pole-size trees <50 years of age with a few scattered large-diameter old-growth redwoods in the overstory. Hardwoods generally dominate riparian areas along large, unconfined channels because these trees quickly colonize gravel bars that become stable following large floods or channel avulsions. Redwood and Douglas fir trees <11 in dbh and <30 years of age dominate the riparian stands along the remaining streams.

Ninety-four rare and endangered plant species have potential to occur in the project assessment area, which includes the USGS 7.5' quadrangle within which the project is located (Childs Hill) and the seven quadrangles that surround it (Crescent City, Sister Rocks, Cant Hook Mountain, Gasquet, Hiouchi, Requa, and Klamath Glen) (CNPS 2011; see plant list, Appendix B). Of those, 79 plant species either occur or have the potential to occur in the MCW, including 17 CNPS List 1B species (plants that are rare,

threatened, or endangered in California and elsewhere), 30 CNPS List 2 species (plants that are rare, threatened, or endangered in California, but more common elsewhere), 1 CNPS List 3 species (plants about which we need more information), and 31 CNPS List 4 species (plants of limited distribution; a watch list). McDonald's rock cress (*Arabis macdonaldiana*) and Western lily (*Lilium occidentale*), two plants listed as endangered both federally and in the state of California, have the potential to occur in the region, though they have not been found in the MCW.

Previous surveys have found fifteen rare species in the watershed (Table 3.4.1). Of these fifteen, only one plant – white-flowered rein orchid (*Piperia candida*) – is on CNPS List 1B; the other fourteen plants are on CNPS List 4.

Table 3.4.1. Rare plants known to occur in the Mill Creek Watershed. (Source: California State Parks Rare Plant Surveys.)

Species	CNPS Rare Plant Rank
<i>Arctostaphylos nortensis</i> Del Norte manzanita	4.3
<i>Arnica cernua</i> serpentine arnica	4.3
<i>Castilleja brevilobata</i> short-lobed paintbrush	4.2
<i>Darlingtonia californica</i> California pitcherplant	4.2
<i>Horkelia sericata</i> Howell's horkelia	4.3
<i>Iris innominata</i> Del Norte County iris	4.3
<i>Lathyrus delnorticus</i> Del Norte pea	4.3
<i>Lilium bolanderi</i> Bolander's lily	4.2
<i>Listera cordata</i> heart-leaved twayblade	4.2
<i>Lomatium howellii</i> Howell's lomatium	4.3
<i>Mitella caulescens</i> leafy-stemmed mitrewort	4.2
<i>Oxalis suksdorfii</i> Suksdorf's wood-sorrel	4.3
<i>Piperia candida</i> white-flowered rein orchid	1B.2

<i>Pleuropogon refractus</i> nodding semaphore grass	4.2
<i>Sidalcea malachroides</i> maple-leaved checkerbloom	4.2

Tree species of particular interest found within the MCW include knobcone pine (*Pinus attenuata*), Port-Orford-cedar (*Chamaecyparis lawsoniana*), western white pine (*Pinus monticola*), and Jeffrey pine (*Pinus jeffreyi*). Knobcone pine is a serotinous (fire-adapted) species that can be a climax species on poor soils or an early successional species in redwood and Douglas-fir. Knobcone pine is abundant in old harvest areas of various ages, due to the extensive timber management and broadcast burning. Recently harvested and burned plantations on the property are characterized by an abundance of regenerating knobcone pines. Such reproduction is unusual within the species' range due to past fire suppression and absence of timber management in knobcone pine stands in general.

The second tree species of special interest is the Port-Orford-cedar (POC), which occurs throughout the Watershed. POC generally occupies coastal ranges in a 40-km (25-mi) wide zone extending from Reedsport, Oregon south to central Humboldt County. Port-Orford-cedar is generally uncommon across its range, although it is locally abundant in some areas of the property. This species is suffering substantial mortality due to an exotic, fatal root disease called Port-Orford-cedar root disease (*Phytophthora lateralis*) that is spreading readily throughout its range. Although the disease is common in the nearby South Fork of the Smith River drainage and the Smith River National Recreation Area, until recently there had been no indication that the disease was present within the Mill Creek Watershed. In fact, the Mill Creek Watershed had been reported to be one of the few unaffected watersheds in Del Norte County. Lack of the disease was probably due to the absence of through traffic and the relatively isolated watersheds. In addition, Stimson did not use heavy equipment brought from off-site, which decreased the potential for the disease to be introduced from other areas. In 2002, the root disease was confirmed by U.S. Forest Service plant pathologists at two locations in upper Bummer Lake Creek area and one location in the Rock Creek drainage. A fourth site has since been confirmed approximately 0.25 miles from one of the Bummer Lake Creek sites. None of these sites are within the proposed project area.

A third tree of interest is the Jeffrey pine, which occurs on serpentine and periodite soils and under environmentally harsh conditions. This pine has a deep root system and is found at elevations between 4,048 and 13,281 and 3,100 meters (10,171 feet). The rare Koehler's stipitate rock cress (*Arabis koehleri* var. *stipitata*) and the federally endangered McDonald's rock cress (*Arabis macdonaldiana*) may occur in association with this species. Within the MCW, the Jeffrey pine series is only found in a small area in the northeast corner of the property. It is unlikely that these species will be found at most planned project sites.

At least two *Darlingtonia* fens occur east of Childs Hill on ultramafic soils. One fen is approximately 12 m by 24 m (40 feet by 80) feet and dominated by California

pitcherplant (*Darlingtonia californica*), Labrador-tea (*Ledum glandulosum*), Sitka alder (*Alnus viridus* var. *sinuata*), salal (*Gaultheria shallon*), slough sedge (*Carex obnupta*), and western azalea (*Rhododendron occidentale*). In addition, a small population of the relatively rare Vollmer's lily (*Lilium pardalinum* spp. *vollmeri*) is located on the site. *Darlingtonia* fens are often associated with other sensitive plant species. A second fen was reported by Stimson personnel on the lower slope of Rattlesnake Mountain. However efforts to locate this fen have been unsuccessful. More fens may be present on the east slope of Childs Hill, in the northeast portion of the property and on the west slope of Rattlesnake Mountain.

The Fen series is similar to the *Darlingtonia* Fen series, except that *Darlingtonia californica* and a few other species are absent. Fen series occur in a few areas in the Watershed. One site is approximately 12 m by 21 m (40 ft by 70 ft) and dominated by Nootka reedgrass (*Calamagrostis nutkaensis*), Sitka alder, deer fern (*Blechnum spicant*), Labrador tea, salal, bog St. John's wort (*Hypericum anagalloides*), and peat moss (*Sphagnum* spp.). Similar fens are exceedingly rare in northern California, making this fen significant. It is similar to a fen located in the Crescent City Marsh Wildlife Area, approximately 1.5 miles to the north, which supports the largest known population of the federally endangered western lily (*Lilium occidentale*). Thus, the fen series on the Mill Creek property provides a transitional stage between the coastal habitat of the western lily, and the more inland *Darlingtonia* fens. Additional representatives or species at the southern limits to their distributions such as sweet grass (*Hierochloa odorata*) and great burnet (*Sanguisorba officinalis*) could be present in the east half of the Mill Creek property.

Animals

Based on the number of plant communities and variety of habitat types found on the property, it is likely that wildlife diversity is relatively high. Although reptile diversity is low, shaded seeps and streams and old-growth forest habitats on the property provide habitat for a variety of amphibians, including five species listed by the California Department of Fish and Game (DFG) as Species of Special Concern (SSC): southern torrent salamanders (*Rhyacotriton variegatus*); Del Norte salamander (*Plethodon elongatus*); tailed frogs (*Ascaphus truei*); northern red-legged frogs (*Rana aurora*) and foothill yellow-legged frogs (*Rana boylei*). The southern torrent salamander, which occurs in perennial and ephemeral seeps, springs, and lower order streams that contain clean gravels with interstitial spaces, is common on the property. This species and the larval form of the tailed frog are both susceptible to increased sediment loads and increased water temperatures. The Del Norte salamander is known to occur in many of the talus slopes located throughout the property.

Small mammals adapted to forest habitats in this area include deer mice (*Peromyscus maniculatus*), dusky-footed woodrats (*Neotoma fuscipes*), northern flying squirrels (*Glaucomys sabrinus*), California red tree voles (*Arborimus longicaudus*) (SSC), and red-backed voles (*Clethrionomys californicus*). Several bat species may also occur within the Watershed. Larger mammals known to occur in Del Norte County include gray fox (*Urocyon cinereoargenteus*), coyote (*Canis latrans*), black bear (*Ursus americanus*), river otter (*Lutra canadensis*), bobcat (*Felis rufus*), mountain lion (*Felis concolor*), black-tailed deer (*Odocoileus hemionus*), and Roosevelt elk (*Cervus elaphus*)

rooseveltis). Humboldt marten (*Martes Americana humboldtensis*) (SSC), which were believed to be extinct has been documented on U.S Forest Service lands to the east. Efforts to detect the Humboldt marten in the Watershed have been to date unsuccessful. The Pacific fisher (*Martes pennanti pacifica*), another SSC mustelid has been documented within the MCW.

Bird species in the MWC include neotropical migrants, such as purple martin (*Progne subis*), yellow warbler (*Dendroica petechia*), and Vaux's swift (*Chaetura vauxi*), northern spotted owls (*Strix occidentalis caurina*) (NSO) and old-growth-associated species such as the marbled murrelet (*Brachyramphus marmoratus*). The northern spotted owl is federally threatened, whereas the marbled murrelet is federally threatened and state endangered. An additional listed species that is known to occur on the property is the bald eagle (*Haliaeetus leucocephalus*) which is currently federally proposed for federal de-listing but is still state endangered. No known bald eagle nests occur on the property. The closest known nest is located approximately 1 mile west of the northwestern portion of the acquisition on Redwood National Park. Marbled murrelets are commonly detected in the Hamilton Buffer Grove and may utilize the Paragon Grove although they have not been detected. Northern spotted owls have recently nested in the MCW but barred owls (*Strix varia*) appear to have taken over all previously known nesting sites. The last successfully documented NSO reproduction in the MCW was in 2008 at the Georges Saddle activity center (AC). The birds from this AC are part of study and are equipped with radio telemetry. They are still present in the MCW but are not paired. A barred owl pair took over their AC in 2009. Nesting and roosting habitat for the northern spotted owl is limited on the MCW given the lack of large trees and multi – tiered stands. Significant prey items of the owl are known to occur on the property and include the dusky footed woodrat, northern flying squirrel, and California red tree vole. The northern flying squirrel is not expected to inhabit stands of the type proposed for treatment. The proposed restoration should increase habitat for the dusky-footed woodrat.

Streams within the MCW support both anadromous and resident fish populations. The Southern Oregon/Northern California Coast Evolutionarily Significant Unit coho salmon (*Oncorhynchus kisutch*) is federally listed as threatened and is currently the only listed fish species found in the MCW. The coho is also listed as state threatened from Punta Gorda to the Oregon border. Other anadromous salmonids known to occur in Mill Creek include fall chinook salmon (*Oncorhynchus tshawytscha*), chum salmon (*Oncorhynchus keta*), steelhead (*Oncorhynchus mykiss*), and coastal cutthroat trout (*Oncorhynchus clarkii*). Other fish species that have been reported from streams on the Mill Creek property include western brook lamprey (*Lampetra richardsoni*), river lamprey (*Lampetra ayresi*), Pacific lamprey (*Lampetra tridentate*), prickly sculpin (*Cottus asper*), riffle sculpin (*Cottus gulosus*), threespine stickleback (*Gasterosteus aculeatus*), Klamath smallscale sucker (*Catostomus rimiculus*), and American shad (*Alosa sapidissima*). Introduced fish species may be present such as black bass (*Micropterus* spp.), sunfish (*Lepomis* spp.), and catfish (*Ictaluridae* spp.) that were previously introduced into the 4.6-acre-foot reservoir located to the northwest of the old mill site.

California State Parks provides policy for the management of natural resources in Section 300 of its Department Operations Manual (DOM). The DOM provides policy for

the protection, restoration, and maintenance of natural resources within the State Park system. The proposed action is in conformance with Department policy.

Would the project	Potentially Significant Impact	Less than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modification, or any species identified as sensitive, candidate, or special status species in local or regional plans, policies, or regulations, or by the Calif. Dept. of Fish and Game, the U.S. Fish and Wildlife Service, or NOAA Fisheries?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the Calif. Dept. of Fish and Game or the U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Have a substantial adverse effect on federally protected wetlands, as defined by §404 of the Clean Water Act (including, but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Create objectionable odors affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

DISCUSSION

- a) The proposed forest restoration promotes species composition change as well as structural change that together favor the development of a late-seral forest condition and its attendant features such as improved habitat for sensitive species. In addition the restoration plan (Appendix D) was designed to reduce impacts to sensitive

species either through excluding areas from the project (e.g. watercourses), incorporating temporal restrictions on operations (e.g. operations not allowed to occur until after the typical avian breeding season) or by conducting surveys to determine the presence of specific sensitive plant and animal species.

There are many sensitive species that may occur within the biological assessment area (all lands within 1.3 miles of the project) but do not have the potential to occur within the project area due to lack of habitat. Examples of these species include the marbled murrelet and coho. Habitat for coho occurs adjacent to the project. Since the majority of trees being cut are under 25 ft, the 60-foot setbacks from known and potential habitat (e.g. waters that provide habitat for fish or aquatic dependent species), and short-term, limited canopy reduction should not result in impacts to these species either directly through loss of habitat or indirectly by elevating water temperatures or increasing sedimentation rates.

Plants

Surveys will be conducted in conformance with California Department of Fish & Game Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities (<http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/guideplt.pdf>). In the case that State or Federal rare, threatened, or endangered species or those listed as CNPS 1A, 1B, or 2 are detected, protective measures as stated in Mitigation Measure Biological 1 will be applied.

MITIGATION MEASURE BIOLOGICAL 1 – SENSITIVE PLANTS

Avoidance is the primary means of mitigation for plants listed as Rare, Threatened, and Endangered, or which occur on the CNPS Lists 1A, 1B or 2 (see below). These measures are dependent on the species natural history and the potential for adverse affects or take. CNPS List 3 and 4 plants will be avoided when feasible; however, mitigation will not be required.

Species Name	Common Name	Mitigation
		WETLAND SHADE ASSOCIATED SPECIES
<i>Mitella caulescens</i>	leafy-stemmed mitrewort	A 75-foot equipment exclusion zone shall be established around plants or populations. Within this buffer the overstory canopy shall not be altered or removed nor shall the hydrology associated with the habitat be altered.
<i>Coptis laciniata</i>	Oregon goldthread	
<i>Sanguisorba officinalis</i>	great burnet	
		WETLAND ASSOCIATED SPECIES
<i>Calamagrostis crassiglumis</i>	Thurber's reed grass	A 25-foot equipment

<i>Carex leptalea</i>	flaccid sedge	exclusion zone shall be established around plants or populations. The hydrology associated with this habitat shall not be altered.
<i>Carex praticola</i>	northern meadow sedge	
<i>Carex serpenticola</i>	serpentine sedge	
<i>Carex viridula</i> var. <i>viridula</i>	green sedge	
<i>Castilleja miniata</i> ssp. <i>elata</i>	Siskiyou paintbrush	
<i>Epilobium oreganum</i>	Oregon fireweed	
<i>Lathyrus palustris</i>	marsh pea	
<i>Montia howellii</i>	Howell's montia	
<i>Packera Hesperia</i>	western ragwort	
<i>Pinguicula macroceras</i>	horned butterwort	
<i>Potamogeton foliosus</i> ssp. <i>fibrillosus</i>	fibrous pondweed	
<i>Sagittaria sanfordii</i>	Sanford's arrowhead	
<i>Viola palustris</i>	alpine marsh violet	
<i>Viola primulifolia</i> ssp. <i>occidentalis</i>	western white bog violet	

FOREST SHADE ASSOCIATED SPECIES

<i>Asarum marmoratum</i>	marbled wild ginger	A 75-foot equipment exclusion zone shall be established around plants or populations. Within this buffer the overstory canopy shall not be altered or removed.
<i>Erythronium hendersonii</i>	Henderson's fawn lilly	
<i>Erythronium howellii</i>	Howell's fawn lilly	
<i>Erythronium oregonum</i>	giant fawn lily	
<i>Erythronium revolutum</i>	coast fawn lily	
<i>Fissidens pauperculus</i>	minute pocket moss	
<i>Gentiana setigera</i>	Mendocino gentian	
<i>Lewisia oppositifolia</i>	opposite-leaved lewisia	
<i>Monotropa uniflora</i>	ghost-pipe	
<i>Packera bolanderi</i> var. <i>bolanderi</i>	seacoast ragwort	
<i>Piperia candida</i>	white-flowered rein orchid	
<i>Cascadia nuttallii</i>	Nuttall's saxifrage	

FOREST AND SCRUB ASSOCIATED SPECIES

<i>Arabis koehleri</i> var. <i>stipitata</i>	Koehler's stipitate rock cress	A 25-foot equipment exclusion zone shall be established around plants or populations.
<i>Arabis macdonaldiana</i>	McDonald's rock cress	
<i>Asplenium trichomanes</i> ssp. <i>trichomanes</i>	maidenhair spleenwort	
<i>Boschniakia hookeri</i>	small groundcone	
<i>Cardamine nuttallii</i> var. <i>gemmata</i>	yellow-tubered toothwort	
<i>Eriogonum pendulum</i>	Waldo wild buckwheat	
<i>Gilia capitata</i> ssp. <i>pacifica</i>	Pacific gilia	

<i>Lilium occidentale</i>	western lily
<i>Lomatium martindalei</i>	Coast Range lomatium
<i>Minuartia howellii</i>	Howell's sandwort
<i>Oenothera wolfii</i>	Wolf's evening primrose
<i>Polemonium carneum</i>	Oregon polemonium
<i>Pyrrcoma racemosa</i> var. <i>congesta</i>	Del Norte pyrrcoma
<i>Sidalcea malachroides</i>	Maple-leaved checkerbloom
<i>Sidalcea malviflora</i> spp. <i>patula</i>	Siskiyou checkerbloom
<i>Sidalcea oregana</i> spp. <i>eximia</i>	Coast checkerbloom
<i>Silene serpentinicola</i>	serpentine catchfly
<i>Streptanthus howellii</i>	Howell's jewelflower
<i>Thermopsis robusta</i>	Robust false lupine

Northern Spotted Owl

NSO surveys on the property have failed to detect nesting pairs for the past three years; non-breeding birds are still present. Areas being treated under this proposal are young, dense stands with closed canopies, and are structurally too simplistic to make suitable nesting or foraging habitat. There are rarely any trees over 12 inches dbh and none of them will be cut. Treatments are expected to improve habitat for NSO foraging and nesting. Mitigation Measure Biological 2 will be taken to reduce short-term impacts to less than significant.

MITIGATION MEASURE BIOLOGICAL 2 – NORTHERN SPOTTED OWL

1. No operations shall occur unless a valid NSO technical assistance has been obtained from the U.S. Fish & Wildlife Service (Service).
2. Surveys for the NSO shall be conducted in conformance with accepted Service approved NSO survey protocols. A map showing the location(s) of known (if any) NSO activity centers within the project area or affected by the project during the past 3 years shall be provided. An activity center is defined as a site(s) identified through surveys conducted to protocol resulting in either the presence of nesting, pair status, or resident single status as defined in the northern spotted owl protocol (USFWS 1992). The final determination of an activity center is at the discretion of the Service.
3. If any known activity centers occur within 400 m (0.25 mile) of the proposed action then the following standard protection measures shall apply.
 - a) A buffer zone for NSO's shall be established within a 305 m (1,000 ft) radius of a tree or trees containing a nest or supporting an activity center during the NSO's critical nesting period which occurs from February 1 through August 31.

- b) No operations shall occur within a 152 m (500-ft) radius of an activity center. Within the 152 m (500 ft) to 305 m (1,000 ft) spatial buffer the minimum habitat requirements of functional roosting habitat (minimum 60% canopy, avg. stand trees >28 cm [11" dbh]) shall be maintained.

Raptors

Due to the distance from the bald eagle nest site and topographic relief, the proposed action should not impact this nest. Bald eagle use on the property is primarily restricted to winter foraging along the fish bearing streams during the salmonid runs. The proposed action should not affect this species as no operations will be located within the riparian area of fish bearing streams.

MITIGATION MEASURE BIOLOGICAL 3 – RAPTORS

Prior to the start of project-related work, a CSP inspector shall be instructed in the identification of raptor nests (both occupied and unoccupied) and raptor breeding behavior by the District’s Senior Environmental Scientist or his designee. During operations, the inspector shall be responsible for assuring that no raptor nests are impacted by the proposed treatments by implementing the following measures:

1. If an unoccupied raptor nest is detected (during the critical nesting period of January 15 through August 31), the nest tree and surrounding screen trees will not be disturbed and the location shall immediately be reported to the Senior Environmental Scientist.
2. If an occupied raptor nest is detected in the project area, the CSP inspector will cease operations within ¼ mile of the raptor nest and immediately notify the Senior Environmental Scientist. The Senior Environmental Scientist or his designee will then determine the species of raptor and the following measures.
3. All trees with nests and appropriate screening trees will be retained.

Species Name¹	Critical Nesting Period	Temporal² (Disturbance) Buffer	Spatial³ (Habitat) Buffer
ACCIPITRIDAE			
Cooper’s Hawk	March 1 – August 31	400 m (0.25 mile)	30 m (100 ft.)
Sharp-shinned Hawk	March 1 – August 31	400 m (0.25 mile)	30 m (100 ft.)
Osprey	February 15 – August 31	400 m (0.25 mile)	30 m (100 ft.)
Redtail Hawk		400 m (0.25 mile)	15 m (50 ft.)
Red-shoulder Hawk	February 1 – August 31	400 m (0.25 mile)	15 m (50 ft.)
STRIGIFORMES			

Great Horned Owls	February 1 – August 31	400 m (0.25 mile)	30 m (100 ft.)
Cavity Nesting Owls	February 1 – August 31	400 m (0.25 mile)	30 m (100 ft.)

¹ Mitigation measures for the northern spotted owl are covered above. Other species of raptors such as the golden eagle, northern harrier, bald eagle, or long-eared owl are not expected to nest within the project area due to lack of habitat and are therefore not addressed.

² Temporal buffers are temporary buffers established around nest sites that restrict operations during the species critical nesting period.

³ Spatial buffers are permanent habitat retention buffers established around a species nest site. Until the nest site is determined to be no longer active (normally after 3 years of no use) habitat modification is not allowed within the buffer.

Marbled Murrelet

No suitable Marbled Murrelet habitat is known to exist within the project area, but it is present in adjacent areas. Treatments are expected to improve habitat in the long term and Mitigation Measure Biological 4 will be taken to reduce short-term impacts to less than significant.

MITIGATION MEASURE BIOLOGICAL 4 – MARBLED MURRELET

1. Where residual trees are located within a project area or within 91 m (300 ft.) of treatment area boundaries, DPR shall consult with the California Department of Fish & Game (DFG) and the Service to determine if the trees constitute potential marbled murrelet nesting habitat.
2. No operations shall occur within 91 m (300 ft.) of occupied or suitable marbled murrelet nesting habitat without DFG consultation.
3. No operations shall occur within 402 m (0.25 miles) of areas known to be occupied by marbled murrelets during the critical nesting season (March 24 – September 15).
4. No operations shall occur within 402 m (0.25 miles) of potential marbled murrelet habitat during the critical nesting season unless surveys conducted to protocol have determined that the area is not utilized or occupied by marbled murrelets. This will also trigger consultation with the DFG and technical assistance with the Service.

Mammals

Even though the project may result in the felling of some Douglas-fir trees no significant adverse effect to the Sonoma tree vole is anticipated. Habitat loss for this CSP species will be minimal and the proposed action will in the long-term result in an increase habitat for this species. The Pacific fisher has been detected within the MCW; however, the project will not adversely affect fisher habitat. Fishers require expanses of contiguous forest with large conifers or hardwoods for loafing and denning sites. The species also makes use of subniven habitats (e.g. logs, slash). The project will not remove large conifers or hardwoods and will provide additional complex horizontal structure near the ground. Therefore, the project will not result in

significant adverse effects to this species. Similarly, the stands proposed for restoration do not contain suitable habitat for the Humboldt marten as they lack the structural components, high shrub cover and large diameter trees, that this species requires.

Amphibians and Fish

Adult tailed frogs and northern red-legged frogs can occur in upland habitats; however, as the project will be occurring during the summer and early fall months these species should be concentrating their activities in the riparian areas where water is present so that they can hydrate. Even if an adult is within the project area, there is minimal potential for the project to impact these species.

The project could result in adverse affects to Del Norte salamanders especially in the more zeric portions of the MCW where the opening of the forest canopy could result in the desiccation of the species habitat. The forest canopy will be more open in the short term as a result of this project and will result in more sunlight reaching the forest floor. Additional sunlight can elevate stream temperatures and dry the forest floor but the canopy will close within 5-10 years of implementation. The additional actions in Mitigated Measure Biological – 4 and 5 will ensure a less than significant impact to amphibians and fish.

MITIGATION MEASURE BIOLOGICAL 5 – AMPHIBIANS AND FISH

1. Areas that provide potential habitat for the Del Norte salamander shall be identified and mapped prior to operations. Spatial buffers that retain the microhabitat of the sites shall be established around areas identified as potential habitat for the Del Norte salamander. The minimum buffer for these sites shall be 15 m (50 ft); however, site specific measures can be developed through consultation with the District's Senior Environmental Scientist and the California Department of Fish & Game provided that the measures are then amended into the MND.
 2. No operations will occur 18 m (60 ft) of Class 1 or 2 watercourses
 3. No operations will occur within the channel of Class 3 watercourses.
- b) Riparian habitats and wetlands have been excluded from the project boundaries. These areas have been provided with a minimum 18 m (60 ft) buffer, which, in combination with the minimal reduction in overstory canopy associated with the projects silvicultural prescriptions, should assure that the project does not result in elevating water temperatures or increasing sedimentation. The proposed action will not result in any significant adverse effects to riparian habitats, wetlands, watercourses, or the beneficial uses of water.
- c) As discussed above in item b, there are no wetlands within the project area. No significant adverse effect.
- d) There are no identified wildlife corridors location within the project. The project area, the Park, and surrounding areas within the biological assessment area consist of a matrix of forest habitats that allow for the movement of most species of wildlife. The project will result in the accelerated development of late-seral forest characteristics

that should facilitate the movement of many wildlife species such as the Humboldt marten and Pacific fisher. No significant adverse effect.

- e) As previously discussed, the proposed action is being conducted in conformance with CSP policy to restore its lands. It is not in conflict with any policies or ordinances. No significant adverse effect.
- f) Del Norte Coast Redwoods State Park is not part of any Habitat Conservation Plan or Natural Communities Conservation Plan. No impact.

V. CULTURAL RESOURCES

ENVIRONMENTAL SETTING

The Crescent City area is home to the Tolowa Indians. The Tolowa occupied an area of approximately 1,030 km² (640 miles²) in four different natural habitats, though they primarily lived in the coastal area based on the time of first contact with Europeans in 1828. European sailors noted that the Tolowa lived in eight villages along the coast for nine to ten months per year, though some people remained behind to maintain the villages. Seven of the villages had populations of as many as 300 people each (Gould 1978: 128).

While most of their time was spent along the coastal strip that gave them access to rock clinging shellfish, ocean mammals and various fish, they spent some time in three other areas that include a belt of the redwood forest, a Douglas fir-oak flat region, and a riverine area around the Smith River. The Tolowa limited the time they spent in these habitats to the three months they did not live on the coast. These areas were hard to access due to the terrain and they lacked the stable resources the marine environment provided.

The MCW falls within the forested areas. Because the redwood forest immediately inland from the coastal strip generally lacked food sources, the Tolowa used it primarily for gathering redwood for building plank houses and ferns for basketry. Beyond the redwood forest lay the Douglas fir-oak flat habitat that furnished an abundant supply of a variety of acorns to provide a staple food. It is possible that seasonal camps and acorn processing areas could be present within the Mill Creek Watershed project area.

HISTORIC BACKGROUND

The MCW is located in Del Norte County, California. Like most counties in California, Del Norte had its start in the gold rush, though in this case as part of Klamath County which no longer exists in California. In 1850, a schooner from San Francisco attempted to land a crew near the mouth of the Klamath River but the small boat capsized killing all the crew except one man. In 1851, another schooner successfully landed a crew effectively establishing the first permanent settlement in the county. While this settlement, founded mainly to search for gold, was short-lived, it led to the founding of Crescent City in 1852. Initially used as a staging area for gold exploration along the Klamath, Crescent City soon became a small commerce center. By 1853, a schooner brought the first sawmill to town, establishing the lumber industry in the county (Bledsoe1881: 9-16).

With the opening of the mill in Crescent City, the Mill Creek basin provided a convenient source for lumber. By the mid-1850s, men were harvesting the timber from the basin and transporting it to Crescent City for milling. Later, W. Bayse constructed a water-powered mill on Mill Creek, providing easier access for milling trees from the basin. Logging continued intermittently into the early 1900s. Between 1909 and 1930, Hobbs, Wall and Company began logging operations along the western slope of Howland Hill and the northwestern hills of the Mill Creek watershed. The Del Norte and Southern railroad hauled the timber to mills in Crescent City (Madej et al 1986: 15).

In 1920, Hobbs, Wall, and Company established a logging camp on Mill Creek near the site of Miller-Rellim Redwoods Company's nursery within the current Mill Creek Acquisition. A railroad spur connected the camp to Crescent City and three railways were constructed on steep slopes. These lines gave the company access to timber in the upper watershed. Hobbs, Wall and Company continued to log old growth trees until 1930 but they went out of business in 1939. While the logging operations ceased, the company continued to allow cattle grazing on the property. In order to keep the harvested areas clear for grazing, the land was burned, a practice that continued from 1930 until 1954 (Madej et al 1986: 15).

In 1954, Miller Rellim Redwood Company (Rellim) purchased the property and re-initiated the cutting of old growth trees. The change in ownership ended the cattle operations. In 1963, Rellim opened a mill to process the old growth trees within the current Mill Creek Acquisition property. This mill operated until 1993 when it was closed. All logging operations ceased in 2001 and in 2002, Save the Redwoods League and others acquired the Mill Creek property, transferring the title to California State Parks soon thereafter (Madej et al 1986: 15 and Dan Porter personal communication 2006).

In order to understand the historic landscape features created by the logging industry, it is important to understand timber harvesting practices that occurred during this time period. Before the late 1930s and the use of crawler tractors, steam donkeys were used to log or yard the timber. The steam donkeys used a cable system to move the equipment from ridge to ridge along specially constructed rail routes. The Madej report states, "steam donkey yarding techniques resulted in large clear-cut areas, heavy concentrations of slash, and intense localized ground disturbance surrounding landings and skid trails" (15).

After 1930, the use of the crawler tractor allowed for selective or partial cutting. At least 70% of the volume of trees in the Mill Creek Basin was harvested, indicating that the partial cut method was used at least until the 1950s. At that time companies became more proficient at harvesting and restocking the redwood forests leading to a rebirth of clear cutting. By the late 1960s clear cutting almost completely replaced partial cutting within the Mill Creek watershed. In the Mill Creek Basin skyline cable yarding methods were used to bring logs up steep slopes to upslope logging roads. While this process led to less roads and minimal ground disturbance, it could only be used in clear-cut logging (Madej et al 1986: 16-19).

Would the project	Potentially Significant Impact	Less than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Disturb any human remains including	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

those interred outside of formal cemeteries?

DISCUSSION

- a) Cultural resources, including historical and archaeological resources, will be inventoried prior to operations within the project area and reports will be submitted to and reviewed by DPR Cultural Resource staff at the Northern Service Center. A PRC 5024 document shall be completed. A Cultural Resource Investigation report will be prepared by a qualified Archeological consultant with direct oversight by State Park Cultural Resource staff prior to any construction activities. Included in the report will be cultural resource sites and recommendations for avoiding impacts to those. Implementation of Mitigation Measures Cultural-1 below will reduce any potential impact to a less than significant level.
- b) If any archaeological or historical resources are encountered during the construction phase of the proposed project, implementation of Cultural Mitigation Measure #1 below will reduce the impact to a less than significant level.

MITIGATION MEASURE CULTURAL 1

- 1. Cultural resources, including historical and archaeological resources, will be inventoried prior to operations within the project area A PRC 5024 document shall be completed. A Cultural Resource Investigation report will be prepared by a DPR Archaeologist with direct oversight by State Park Cultural Resource staff prior to any construction activities.
 - 2. Any historic or prehistoric archaeological sites encountered in subsequent archaeological surveys will be flagged with a 10-meter buffer with flagging for avoidance during project implementation.
- c) Based on surveys conducted to date and a records search no human remains or burial sites have been documented or are known to exist at the proposed project sites. No impact is anticipated, but if any human remains or burial artifacts are identified, implementation of Cultural Mitigation Measure #1 and conditions stated in the plan will reduce the impact to a less than significant level.

VI. GEOLOGY AND SOILS

ENVIRONMENTAL SETTING

The MCW is located in the Northern California Coast Range and the Western Klamath Mountains Province, expressed as northwest trending mountains and valleys formed by the convergence of the Gorda and North American tectonic plates. The bedrock within the Coast Range consists of Franciscan Broken Formation. These rocks are tectonically fragmented interbedded greywacke, shale and conglomerate (Blake and Jones, 1974). Highly sheared serpentinite and peridotite of the Klamath Mountains Province underlie the northeastern portion of the project area (Madej et. al., 1986).

The Coast Range and Klamath mountain provinces are separated by the Coast Range Thrust Fault. Geologic activity, soil types, and high levels of rainfall have created steep and potentially unstable slopes. Past land use and the construction of poorly designed roads have destabilized some slopes and are presently contributing to additional instability. Moderate to high seismic activity can be expected in this area, with associated ground shaking, block-falls, and liquefaction of saturated sediments. Mapping by Merrill et al. (2011) revealed the location of historic mass wasting within the MCW. Using SINMAP, a software package for assessing shallow slope instability, they also mapped zones most prone to shallow failure (Figure 4 of the Restoration Plan, Appendix D). Deeper seated landslides have a very low potential for renewed movement as a result of this project because of the high canopy retention.

The soils and Quaternary fluvial deposits of the MCW are derived from the Franciscan Formation and Tertiary deposits. Generally weakly- lithified Tertiary fluvial, marine, and estuarine rocks crop out primarily along Childs Hill and Little Bald Hills. The Franciscan Formation includes primarily sedimentary rock, along with some igneous and metamorphic rock material. The principal rock material is greywacke, highly variable sandstone with angular medium-sized grains, mixed with shale and siltstone. Igneous and metamorphic rocks, including serpentinite, are also combined in the substrate along the Coast Range Thrust Fault, on the east-northeast side of the MCW.. The shale has a high proportion of angular mineral and rock fragments, with only a small amount of clay materials.

Seismicity

Seismicity in the region is high. The Park and project area would be strongly affected by groundshaking generated by rupture of the Cascadia subduction zone, the surface trace of the zone lies about 100 kilometers offshore west from the Park; however, the fault dips below the Park at shallower a depth of about 20 kilometers. This zone is capable of magnitude 9 earthquakes. Depending on site-specific characteristics potential seismic hazards in the Park include liquefaction, landsliding (discussed in the preceding section), and strong to violent, possibly amplified, ground shaking.

The potential for liquefaction within the project area is most common on floodplains and terraces or steep slopes with a shallow water table. Slopes having the highest potential for shallow instability, which include slopes subject to liquefaction, were identified by Merrill et al. (2011).

The project site is likely to receive violent groundshaking in the event of a large magnitude earthquake nearby. In addition to the Cascadia Subduction Zone, active faults (movement within the last 11,000 years) that would produce strong ground shaking in the Park include the Big Lagoon – Bald Mountain fault, capable of magnitude 7.5 earthquakes; the Whaleshead fault, capable of magnitude 7.0 earthquakes; and the Trinidad fault, capable of magnitude 7.5 earthquakes.

Table 3.6.1: Faults and Parameters Near the MWA

Fault Name & Geometry¹	Slip Rate (mm/year)	Recurrence Interval (years)	Maximum Moment Magnitude	Last Known Fault Displacement
Big Lagoon- Bald Mountain (thrust)	0.9	1380	7.5	No Data
Whaleshead (strike slip)	2.4	145	7.0	No Data
Trinidad (thrust)	4.4	1900	7.5	No Data
Cascadia Subduction Zone (thrust)	40	200-800	9.0	1700

(References: Topozada, T., Borchardt, G., Haydon, W., Petersen, M., Olson, R., Lagorio, H., and Anvik, T., 1995, Planning scenario in Humboldt and Del Norte counties, California for a great earthquake on the Cascadia Subduction Zone, California Department of Conservation, Division of Mines and Geology, Special Publication 119, 157 pages; and

http://earthquake.usgs.gov/research/hazmaps/products_data/2002/faults2002.php

Soils

Soil development occurs in response to the weathering of the parent material (rocks and alluvial deposits) and input from surface materials (vegetation), and varies depending on the topography (slope, aspect, and hydrologic conditions), underlying rock composition, and time. The soils in the Park are generally well developed because the mild wet climate has caused a high degree of weathering of the underlying permeable materials. Most of the soils have strongly developed surface horizons that are rich in organic matter and nutrients, particularly in areas that have coniferous vegetation. In some places, the top soil may be relatively thin owing to the steep slopes and past logging disturbance.

Staff from the NRCS recently completed soil mapping of Redwood National and State Parks, including the MCW, providing a modern soil survey that provides a wealth of soil data (USNRCS 2008). Seventeen soil associations and two soil series of various slopes are identified in this mapping. With respect to surface erosion, approximately 75% of the land base has a severe erosion hazard rating. Only the Bigtree-Mystery Association, on floodplains, has a slight erosion hazard rating. Moderate erosion hazard ratings generally occur on ridgetops for the Trailhead-Wiregrass, Wiregrass-Pittplace-Scaath, and Coppercreek-Tectah-Slidecreek Associations. The Surpur and Childshill soil series also have moderate erosion hazards. The Slidecreek-Lacks creek-Coppercreek, Wiregrass-Rocksaddle, Sasquatch-Sisterrocks-Ladybird, Sisterrocks-Ladybird-

Footstep, Jayel-Walnett-Oragan, Coppercreek-Slidecreek-Tectah, Wiregrass-Rockysaddle, Sasquatch-Yeti-Footstep, Sasquatch-Yeti-Sisterrocks, Gasquet-Walnett-Jayel, Oragan-Weitchepec, Coppercreek-Ahpah-Lacks creek, and Scaath-Rockysaddle-Wiregrass Associations have severe erosion hazard ratings, generally on the valley sidewalls.

Would the project	Potentially Significant Impact	Less than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Expose people or structures to potential substantial adverse effects including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? (Refer to Division of Mines and Geology Special Publication 42)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii) Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iii) Seismic related ground failure including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iv) Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project and potentially result in on or off-site landslide, lateral spreading subsidence, liquefaction, or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Be located on expansive soil as defined in Table 18-1-B of the Uniform Building Code (1997) creating substantial risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Have soils incapable of adequately supporting disposal systems where sewers are not available for the disposal of waste water?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Directly or indirectly destroy a unique paleontological resource or site or unique geological feature?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

DISCUSSION

- a) Although those working on the project will be exposed to any event that might occur, the entire north coast is a seismically active region. While the chance of the rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, or landslides are certainly possible in this area, and is probably higher than in most of the nation, this project will not substantially increase the exposure of people or structures to risk of loss, injury, or death as a result of these events because of the seasonality and short duration of the work. No significant adverse effect.
- b) There will not be any heavy equipment working or yarding on the project slopes that could damage topsoil. Those canopied areas that are opened by the restoration will have a blanket of slash that will act as a mulch to protect topsoil. The mulch will eventually increase topsoil resources as it decays. . No significant adverse effect.
- c) Based on the SINMAP modeling the project is located within geologic units with potentially unstable soils; however, the project will improve stability as it will help accelerate forest recovery. Historic mass wasting sites will be avoided for treatment. Many of the historic mass wasting sites have been identified (Figure 4 of the Restoration Plan, Appendix D). The Restoration Plan (Appendix D) requires that no operations will occur in mass-wasting areas or unstable slopes (currently identified or not). As the roots of the cut trees decay, soil cohesion will be reduced slightly, however this short-term effect will be offset as the remaining trees grow more rapidly in response to the thinning. The project will have a less than significant impact on geologic instability and, with implementation of best management practices, adverse impacts to worker safety and their equipment due to existing geologic instability will be reduced to a less than significant level.
- d) No structures are involved with the project; therefore, risks from expansive soils do not apply. No impact.
- e) No disposal systems are involved with the project: therefore, risks from failure of disposal systems do not apply. No impact.
- f) There are no known unique paleontological resources or sites or unique geologic features in the project area. No impact.

VII. Greenhouse Gas Emissions

ENVIRONMENTAL SETTING

The project consists of using chainsaws to cut trees as a way of improving growth, health, and resiliency of remaining trees and the forest as a whole. Trees that are cut will be left on site to decompose naturally. The DPR Cool Parks initiative seeks to consider carbon sequestration when determining stewardship practices on park lands.

Would the project	Potentially Significant Impact	Less than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing emissions of greenhouse gases?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

DISCUSSION

- a) The primary objective of the proposed project is to protect Park resources by promoting forest health and to accelerate the development of old forest characteristics (late successional) in formerly harvested stands. This will result in the accelerated growth of individual trees and the reduction of the long-term susceptibility of the forest to catastrophic or stand replacing fire. In doing so the project will result in the cutting of trees that will be left to rot on the forest floor. As a result, these felled trees will release carbon into the environment (Schlesinger and Lichter 2001, Spears et al 2003). This, however, will be a gradual process were the carbon is leached out over several decades versus a more accelerated process such as fire where the carbon is immediately released into the environment. The remaining trees will then be exposed to an increase in sunlight and nutrients that will result in rapid growth and will increase the stands trajectory towards forest conditions associated with late seral or old-growth stands. Old-growth forests store more carbon than young-growth forests (Busing and Fujimori 2003, Watson et. al. 2000), therefore the restoration will result in a forest more capable of storing larger amounts of carbon in a shorter period then if the restoration were not to occur. The release of the sequestered carbon from the felled trees will be offset by the increased carbon sequestration of the restored forest. The proposed forest restoration will assist in the reduction of global warming processes. No significant impact.
- b) This project promotes late-seral forests that store more carbon than any other potential land use (Busing and Fujimori 2003, Watson et. al. 2000). This project is

therefore consistent with DPR's cool parks initiative that encourages carbon sequestration. No Impact.

VIII. HAZARDS AND HAZARDOUS MATERIALS

ENVIRONMENTAL SETTING

No fuel storage facilities currently exist within or adjacent to the project area. Park employees and contractors will be filling chainsaws with fuels during operations.

Physical hazards in the MCW are similar to any outdoor setting and include steep slopes, rushing water, poisonous plants, wild animals, disease carrying insects, and inclement weather. The project area is in a remote portion of Del Norte County and transportation to the nearest hospital would require an hour drive time from some locations. No airports are located within 3.2 km (2 miles) of the project site nor are there any airstrips within the Park or adjacent to park property. Helicopter landing locations have been identified and geo-referenced throughout the Park (Figure 4 of the Restoration Plan, Appendix D) and could be used to evacuate personnel in an emergency.

Some of the roads and treatment locations on the northeast side of the MCW (within the project area) may contain serpentine soils (Merrill et al. 2011, and Figure 4 of the Restoration Plan, Appendix D). Serpentine soils can contain naturally occurring asbestos minerals, some of which pose a hazard to human health. All of the serpentine-bearing roads within the project area are greater than one mile from a sensitive receptor; however workers and/or park visitors may be exposed to asbestos dust minerals if they are in proximity to on site or fugitive dust.

Would the project	Potentially Significant Impact	Less than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and/or accident conditions involving the release of hazardous materials, substances, or waste into the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Be located on a site which is included on a list of hazardous material sites compiled pursuant to Government Code §65962.5 and as a result create a significant hazard to the public or environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

- | | | | | |
|---|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| e) Be located within an airport land use plan or, where such a plan has not been adopted within two miles of a public airport or public use airport? If so, would the project result in a safety hazard for people residing or working in the project area? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| f) Be located in the vicinity of a private airstrip? If so, would the project result in a safety hazard for people residing or working in the project area? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| h) Expose people or structures to a significant risk of loss, injury, or death from wildland fires, including areas where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

DISCUSSION

- a) Project activities would require the use of certain potentially hazardous materials such as fuels, oils, or other fluids associated with the operation and maintenance of vehicles and chainsaws. Generally, these materials would be contained within vessels engineered for safe storage. Large quantities of these materials would not be stored at or transported to the work sites. Park employees and contractors will be driving to and from the project area transporting potentially hazardous materials such as fuels, oils, or other fluids associated with the operation and maintenance of vehicles and equipment. Spills, upsets, or other operational related accidents could result in a release of fuel or other hazardous substances into the environment. The following project requirements are incorporated into the restoration plan to reduce impacts to a less than significant level. 1) All vehicles will be limited to existing roads; 2) Equipment will be inspected for leaks immediately prior to the start of construction, and regularly inspected thereafter until equipment is removed from the park. Leaks that develop will be repaired immediately in the field or work with that equipment will be suspended until repairs are made. 3) CSP will ensure that the equipment operators maintain a spill kit at the site throughout the life of the project. In the event of any spill or release of any chemical in any physical form on or immediately adjacent to the project sites or within the Park during operations, the contractor will immediately notify the appropriate CSP staff (e.g., project manager or supervisor). Appropriate agencies will be notified in the event of significant spillage. 4) No maintenance or fueling activities will be permitted within 30 m (100 ft) of a stream.

- b) The Restoration Plan (Appendix D) contains features that will prevent exposure to asbestos dust such as informing workers of areas where asbestos is present in the roads, limiting driving speeds to 15 mph, and stopping during high winds. During the project, hazardous substances could be released to the environment from vehicle or equipment fluid spills or leaks. Implementation of the measures discussed above will reduce risks to on-site workers, the public, or the environment to less than significant.
- c) There are no schools or proposed schools within one-quarter mile of the project area. No impact.
- d) The project area is not included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5. Therefore, no impact would occur with project implementation.
- e) The planned project sites are not located within two miles of a public use airport. Therefore, no impact would occur because of this project.
- f) The planned project sites are not located within the vicinity of a private airstrip. No impact.
- g) All construction activities associated with the project would occur within the boundaries of the DNCSP; work would not restrict access to or block any public road. As stated above, the project site is not part of any emergency response or evacuation route. The project has been designed to avoid any conflicts with existing plans or increase in emergency response time and a site-specific safety plan is required for each phase of restoration. (Appendix B of Restoration Plan [Appendix D]) Less than significant impact.
- h) One of the objectives of the project is to promote fire resistant stands while avoiding problems with heavy thinning such as a prolonged increased fire danger due to increased fuel loads and microclimate changes. The project description includes measures to insure that impacts are less than significant, for example, a fuel reduction treatment will be created adjacent to drivable roads. All down woody material ≤ 18 cm (7 in) dbh within 7.6 m (25 ft) of drivable roads will be pulled to the road and chipped or scattered further into the unit. Chips will be distributed in the treatment area to a depth ≤ 0.15 m (6 in). Crews will be required to park vehicles away from flammable material such as dry grass and brush. Park staff will be required to have a State Park radio on site, which allows direct contact to centralized dispatch center, to facilitate the rapid dispatch of control crews and equipment in case of a fire. All felled trees will be brought to the ground, and will not be left suspended or hanging in crowns of other trees. Slash will be lopped and scattered to within 0.9 m (3 ft) of ground. Less than significant impact.

IX. HYDROLOGY AND WATER QUALITY

ENVIRONMENTAL SETTING

Water quality in the MCW ranges from extremely clear and free of any pollutants, in streams that drain from old growth forests, to turbid, poor quality in areas previously impacted by humans; however, while there are short duration spikes in turbidity, the overall water quality is among the best in Northern California. The North Coast Regional Water Quality Control Board (RWQCB) regulates water quality in the area of California where the park is located.

The restoration project occurs in the North Coastal Basin, which covers an area of approximately 13,775 square kilometers (8,560 square miles) located along the north-central California Coast. The Water Quality Control Plan for the North Coast Region (Basin Plan) is comprehensive in scope. It contains a brief description of the North Coast Region, and describes its water quality and quantity problems and the present and potential beneficial uses of the surface and ground waters within the Region. Precipitation in the MCW occurs primarily in the six months from November through April. Summer showers are infrequent, with winter rainfall accumulations of up to 203 cm (80 in.) During the summer months, a thick fog frequently blankets the coastal areas. The prevailing wind direction is northwesterly during the spring, summer, and fall and shifts to southeasterly during the winter season. Wind speed along the coast is typically 24 to 40 kmph (15 to 25 mph), with gusts up to 80 kmph (50 mph) during winter storms.

Groundwater in the MCW is relatively free of pollutants and considered very high quality because very few potential pollution sources exist. The groundwater table in the MCW fluctuates annually, depending on rainfall and seasonal temperatures. The groundwater table varies throughout the area because of the geological or topographical influences. The area does not serve to recharge commercially available aquifers. There are no public water sources in the area impacted by the proposed project.

Tsunamis occur when the water column above the sea floor is displaced by an earthquake and/or a large underwater landslide. In the open ocean, tsunamis can travel as fast as 600 miles per hour. There are no bodies of water in the project area that are vulnerable to tsunami or seich (oscillation of a body of water in a containing basin).

Would the project	Potentially Significant Impact	Less than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

- the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?
- c) Substantially alter the existing drainage pattern of the site or area including through alteration of the course of a stream or river in a manner, which would result in substantial on or off-site erosion or siltation?
- d) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?
- e) Substantially degrade water quality?
- f) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?
- g) Place structures that would impede or redirect flood flows within a 100-year flood hazard area?
- h) Expose people or structures to a significant risk of loss, injury, or death from flooding, including flooding resulting from the failure of a levee or dam?
- i) Result in inundation by seiche, tsunami, or mudflow?

DISCUSSION

- a) The project is designed to comply with all applicable water quality standards and waste discharge requirements. Based on the project description, the project would result in a less than significant impact to water quality and waste discharge.
- b) The project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge. Reducing tree densities may slightly decrease water uptake allowing an increase in water available for groundwater recharge, but the effect will be short-term and negligible. Impact of the project on groundwater supplies would be less than significant.

- c) Project was designed to maintain a 18 m (60 ft) no operation zone around habitat for non-fish aquatic species and all fish bearing streams. Unstable areas are also excluded from the project area. These measures coupled with the high canopy retention throughout the project area will assure that the proposed action will not alter the drainage pattern of the landscape nor of any waters. Less than significant impact.
- d) The project would not create or contribute runoff water in amounts that would exceed the capacity of existing or planned stormwater drainage systems, or provide substantial additional sources of polluted runoff. No stormwater systems are downslope from the project location nor are any planned. No impact.
- e) By increasing forest canopy and root cohesion of existing trees the long-term results from the proposed project will be beneficial to water quality by reducing stream temperatures and decreasing sedimentation). By maintain the appropriate buffer areas near streams the project is designed to insure less than significant impacts to water quality. .
- f) The project would not involve housing designed for human occupation. There is no housing within the MCW. No impact.
- g) The project would not include any structure designed for human occupation. No impact.
- h) The project would not expose people or structures to a significant risk of loss, injury, or death from flooding, including flooding resulting from the failure of a levee or dam. No impact.
- i) The project would not result in inundation by seiche or tsunami because the project is not located near a large water body. There is a low potential for mudflow to result from the project because of the mulching of treatment sites and generally high canopy retention. Work would occur during periods of non-saturation and no surface runoff to limit workers exposure to mudflow. No impact.

X. LAND USE AND PLANNING

ENVIRONMENTAL SETTING

The proposed project is located within the boundaries of DNCRSP, which is zoned for recreation in Del Norte County. The intended purpose of DNCRSP is to preserve outstanding natural, scenic, and cultural values, and indigenous aquatic and terrestrial fauna and flora and allow for recreational opportunities consistent with other uses.

The MCW portion of DNCRSP is a 64 km² (40-mi²) area located approximately 9.6 km (6 miles) southeast of Crescent City in Del Norte County. The property directly links large areas of old-growth coast redwood forest within Redwood National and State Parks with National Forests located in the western Klamath-Siskiyou Mountains. The MCW is bordered by Jedediah Smith Redwoods State Park to the north, other portions of Del Norte Coast Redwoods State Park to the west, Six Rivers National Forest to the east, and private industrial timberlands to the south (Figures 1-5, Appendix A). The property encompasses a large portion of the Mill Creek watershed (37 km² [923 mi²]) tributary to the Smith River, a large portion of the Rock Creek watershed [19 km² (12 mi²) tributary to the South Fork Smith River, and small headwater portions of the Terwar (1.6 km² [1.0 mi²]), Hunter (0.64 km² [0.4 mi²]), and Wilson (3.2 km² [2 mi²]) creek watersheds.

Redwood National Park, Jedediah Smith Redwoods State Park, Del Norte Coast Redwoods State Park, and Prairie Creek Redwoods State Park are cooperatively managed under a Memorandum of Understanding (MOU) between the NPS and CSP (RNSP 1996). The MOU includes lands within the congressionally authorized boundary of Redwood National Park, often collectively referred to as Redwood National and State Parks. Each agency maintains its management authority and operates their lands under their applicable laws and policies; however, joint state and federal management is intended to enhance protection of Park resources and improve public service using combined state and federal resources. A General Management Plan and Environmental Impact Statement/Environmental Impact Report (GMP) were prepared by the Redwood National and State Parks to provide “a defined, coordinated direction for resource preservation and visitor use and a basic foundation for decision making and managing for the following 15 to 20 years” (RNSP 1999). The joint plan, approved in 2000, covers approximately 3,484 km² (165 mi²) and focuses on park establishment, cooperative management of park resources, and the visitor experience.

The GMP was amended (GPA) in 2011 to include the MCW property. The vision statement as described in the GPA states that management practices “are tailored to promote, maintain, and restore ecological functions of the habitats to a pre-European condition.” The project sites do not occur within developed areas or areas designated by the GPA for potential development.

The Del Norte county General Plan presents the Mill Creek Watershed as State Land but does not specifically address activities or management goals for the property. Del Norte County has also zoned the DNCRSP as Parks/Open Space

The Green Diamond Resource Company, which owns land adjacent and to the south of the MCW currently has in place two Habitat Conservation Plans (HCP). The first one is

for northern spotted owls. This HCP is currently under revision and is expected to be expanded to a Multiple Species Habitat Conservation Plan (MSHCP) for terrestrial species. The company also has an Aquatic MSHCP which primarily covers salmonids.

Would the project	Potentially Significant Impact	Less than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with the applicable land use plan, policy, or regulation of any agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

DISCUSSION

- a) The project is situated completely within the boundaries of DNCRSP. No established community exists within the boundaries of the Park. Therefore, the proposed project would not physically divide an established community. No impact.
- b) The project would not conflict with any land use project, policy, or regulation of any agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect. In general, this project has been designed to meet a critical resource protection need, and is in agreement with the General Plan for the Park. The area is zoned Parks/Open Space by Del Norte County. The project is in accordance to the zoning. No impact.
- c) The project would not conflict with any applicable habitat conservation plan or natural community conservation plan because no such plans have been adopted for DNCRSP. HCPs and MSHCPs on the adjacent Green Diamond Resource Company lands are not applicable to CSP lands. Refer also to Biological Section Item f. No impact.

XI. MINERAL RESOURCES

ENVIRONMENTAL SETTING

No significant mineral resources have been identified within the boundaries of the MCW. Mineral resource extraction is not permitted within State Park property.

Would the project	Potentially Significant Impact	Less than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that is or would be of value to the region and the residents of the state?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

DISCUSSION

- a) The project would not result in the loss of availability of a known mineral resource because no known mineral resources exist within the Park and resource extraction is not allowed in State Park units. No impact.
- b) The project would not result in the loss of availability of a locally important mineral resource recovery site because none exists within the Park and resource extraction is not allowed in State Park units. No impact.

XII. NOISE

ENVIRONMENTAL SETTING

The MCW is located in rugged forested terrain in northern California, surrounded by steep mountains and the Pacific Ocean.

Ambient noise associated the project area results from administrative use on Park roads, park visitor such as hikers, mountain bikers, horses, and occasional air traffic consisting of small private planes, Coast Guard helicopters, and CalFire firefighting aircraft.

This Park contains special status wildlife species that can be adversely affected by excessive noise during their nesting and breeding seasons. The USFWS has The Del Norte County General Plan regulates daytime ambient noise levels that exceeds 52 dBA measured at residential properties. The closest residential property is over 1 mile from the project area with a forest and ridge (Rellim ridge) between the two. The USFWS has developed guidelines for eliminating noise impacts to threatened and endangered wildlife species in this area. These guidelines include seasonal restrictions on the use of noise-generating equipment in potential habitat and/or during periods of nesting or the early phase of rearing of young. These restrictions apply to any use of noise generating equipment throughout the region. Measures have been incorporated to assure that the proposed action will not result in adverse effects associated with noise to these sensitive wildlife species (refer to Mitigation Measure Biological 2, 3, & 4). The USFWS staff has visited recent forest restoration projects proposed by the North Coast Redwoods District and has been consulted regarding this project.

Would the project	Potentially Significant Impact	Less than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Generate or expose people to noise levels in excess of standards established in a local general plan or noise ordinance or in other applicable local, state, or federal standards?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Generate or expose people to excessive groundbourne vibrations or groundbourne nose levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Create a substantial permanent increase in ambient noise levels in the vicinity of the project (above levels without the project)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Create a substantial temporary or periodic increase in ambient noise levels in the vicinity of the project, in excess of noise levels existing	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

- without the project?
- e) Be located within an airport land use plan or, where such a plan has not been adopted within two miles of a public airport or public use airport? If so, would the project expose people residing or working in the project area to excessive noise levels?
- f) Be in the vicinity of a private airstrip? If so, would the project expose people residing or working in the project area to excessive noise levels?

DISCUSSION

- a) Project related noise levels at and near the planned project areas would fluctuate depending on the amount of chainsaws operating in close proximity at any given time. There are no noise-sensitive human land uses including private, residential land located in the vicinity of the project site that would be substantially affected by the proposed activities. Contractors and staff will be required to wear hearing protection when working within 15 m (50 ft) of chainsaws or chippers. Implementation of these measures stipulated in the restoration plan (Appendix D) would reduce any potential adverse impacts to a less than significant level.
- b) Project related activities would not involve the use of explosives, pile driving, or other intensive construction techniques that could generate significant ground vibration or noise. Minor vibration adjacent to chainsaw use during operations would be generated only on a short-term basis. Therefore, ground borne vibrations and noises would have a less than significant impact.
- c) Project-related noise would only occur during actual construction and be temporary in nature. Once construction is completed, all noise-generating equipment would be removed from the site. The project would not create any source that would contribute to a substantial permanent increase in ambient noise levels near the project. No impact.
- d) See Discussion XI (a) and (c) above. Less than significant impact.
- e) The project is not within an airport land use plan and is not within two miles of an airport or private airstrip; therefore, the project would have no impact.
- f) The project is not within the vicinity of an airport or private airstrip; therefore, the project would have no impact.

XIII. POPULATION AND HOUSING

ENVIRONMENTAL SETTING

No housing exists within the project area. The General Plan Amendment allows for the creation of a lodge and campgrounds within the project area, however construction is not anticipated within the lifetime of this plan. The entire project area is owned by State Parks.

Construction and State Park staff generally live in nearby Crescent City. Occasionally, CSP staff or contract workers may camp on-site during the operation phase in tents or travel trailers. The trailers are required to be self-contained and are located on existing roads, landings, or other areas used by seasonal work crews.

Would the project	Potentially Significant Impact	Less than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Induce substantial population growth in an area either directly (for example by proposing new homes and businesses) or indirectly (for example through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Displace substantial numbers of existing housing necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Displace substantial numbers of people necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

DISCUSSION

- a) The project would not induce substantial population growth because the project does not involve housing or new businesses. The project would include restoration of forest stands and would have no direct or indirect effect on population growth. The project would have no more than 25 employees working at one time during the summer months.
- b) No replacement housing would be required; all workers already maintain housing in the region or provide their own temporary facilities.
- c) No people would be displaced because the project only involves forest restoration and would not restrict access or private property use. All work would take place within the confines of the Park boundaries, with no additions or changes to the

existing local infrastructure. Therefore, the project would have no impact on population growth or housing requirements in the area.

XIV. PUBLIC SERVICES

ENVIRONMENTAL SETTING

The project area is in a remote portion of Del Norte County. The nearest school (Crescent Joe Hamilton Elementary School) is located approximately 6 km (4 mi) away. Police protection is provided by CSP Rangers. Fire protection is provided by the California Department of Forestry and Fire Protection with the nearest fire station located in Crescent City, California approximately 16 km (10 mi) to the northwest. A limited number of the main logging roads within the MCW are open to the public on weekends for hiking, biking and horseback riding.

Would the project	Potentially Significant Impact	Less than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Result in significant environmental impacts from construction associated with the provision of new or physically altered governmental facilities or the need for new or physically altered governmental facilities to maintain acceptable service ratios, response times, or other performance objectives for any of the public service:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

DISCUSSION

a) The primary goal of the proposed restoration treatments is to protect Park resources by promoting forest health and to accelerate the development of late-seral forest characteristics in formerly harvested stands. The project area is a remote forest stand that is not adjacent to existing facilities.

Fire

No additional demands on fire protection are expected because of this project. No change in the status or usability of existing roads will result from this project. No Impact.

Police

No additional demands on rangers or local police are expected because of this project. No change in the status or usability of existing roads will result from this project. No Impact.

Schools

No schools exist within or adjacent to the project area. No changes would occur that would affect existing schools or require additional schools or school personnel. No impact.

Parks

No new or altered facilities or services would be required to maintain acceptable public service as a result of this project and no public roads or trails will be closed as a result of this project. No impact.

Other

The project would improve the DNCSP by protecting the natural resources of the park. The project would improve the aesthetic quality of the slopes, improve visitor safety, reduce sediment sources and downstream flooding, and encourage natural vegetation. No adverse impact would occur at the DNCSP or any other public facilities because of this project.

XV. RECREATION

ENVIRONMENTAL SETTING

The MCW is open to the public on weekends during daylight hours for hiking, biking and horseback riding. Several of these roads link to the Howland Hill portion of Redwood National Park. Visitors are required to stay on roads designated as open to the public. Other portions of DNCRSP contain a campground and hiking trails. DNCRSP is currently listed on the Park Closure List announced on May 13, 2011. Visitation may be further limited or prohibited after September 2011.

Would the project	Potentially Significant Impact	Less than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

DISCUSSION

- a) Alternate trails could potentially receive additional use if people choose to avoid work areas; however, any changes in use pattern would be temporary and occur over a short duration. The project would not increase existing uses of the Park, and would not accelerate the deterioration of any facility because no increases in public use would result from the project. The additional use of any trails or roads would be minimal and have a less than significant impact.
- b) The project would not include the construction of recreational facilities or the expansion of any facility that would have an adverse physical effect on the environment. The project is a restoration of existing deleterious conditions that would reduce the existing adverse impacts on the environment; therefore, no negative impact would occur.

XVI. TRANSPORTATION/TRAFFIC

ENVIRONMENTAL SETTING

The MCW currently contains over 523 km (325 mi) of roads and associated skid trails that were built to facilitate timber extraction by the previous owner. The majority of these roads are not drivable due to dirt berms, fill removed from water crossings and vegetation growing over the roads. A network of roads remains open for restoration work and some are open to the public on a limited basis.

Would the project	Potentially Significant Impact	Less than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Cause a substantial increase in traffic in relation to existing traffic and the capacity of the street system (i.e. a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Exceed, individually or cumulatively, the level of service standards established by the county congestion management agency for designated roads or highways?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Cause a change in air traffic patterns including either an increase in traffic levels or a change in location that results in substantial safety risks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Contain a design feature (e.g. sharp curves or a dangerous intersection) or incompatible uses (e.g. farm equipment) that would substantially increase hazards?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Result in inadequate parking capacity?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g. bus turnouts, bicycle racks)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

DISCUSSION

- a) The project would not increase the traffic on any public street system. No more than four pickup trucks would be used to travel to and from the project site on a daily basis. There are no intersections in the vicinity of the project area. No impact.
- b) The project would not cause traffic levels to exceed, individually or cumulatively, the level of service standards for designated roads or highways. No more than four pickup trucks would be used to travel to and from the project site. The number of vehicles and frequency of travel related to this project is insignificant. No impact.
- c) The project sites are not located within an airport land use area, within two miles of a public airport, or near a private airstrip, and do not serve as a normal reporting point for air traffic in the area. Nothing in the proposed project would in any way affect or change existing air traffic patterns; therefore, no impact would occur because of this project.
- d) The project does not contain a design feature or incompatible use that would substantially increase traffic hazards. The trails/roads occurring in the project area will not be altered. No impact.
- e) The project would not result in inadequate emergency access because the project would not impact any roads/trails that are currently open to public vehicle use. No impact.
- f) The project would not result in inadequate parking capacity because it would not change the pattern of use. No impact.
- g) The project would not conflict with adopted policies, plans, or programs supporting alternative transportation because it does not reduce or increase transportation uses. No impact.

XVII. UTILITIES AND SERVICE SYSTEMS

ENVIRONMENTAL SETTING

The project area does not contain any utilities or service systems. The area is second growth forest in a remote wildland setting. There are no trashcans or trash pickup services in the project area. There is no project related debris generated from project activities that will require removal.

Would the project	Potentially Significant Impact	Less than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Exceed wastewater treatment restriction or standards of the applicable Regional Water Quality Control Board?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No		
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No		
d) Would the construction of these facilities cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Have sufficient water supplies available to serve the project from existing entitlements and resources or are new or expanded entitlements needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Result in a determination by the wastewater treatment provider that serves or may serve the project, that it has adequate capacity to service the project's anticipated demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h) Comply with federal, state, and local statutes and regulations as they relate to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

DISCUSSION

- a) No wastewater would be produced by this project. No impact.
- b) No wastewater will be produced by this project. No impact.
- c) The project would not require or result in the construction of new stormwater drainage facilities or expansion of existing facilities because no stormwater facilities are needed. No impact.
- d) No outside source of water would be required during project implementation. No impact.
- e) No wastewater will be produced by this project. Project will occur during daytime work hours over a short duration (no more than 2 months). No impact.
- f) No impact; no solid waste would be generated by this project. Waste from construction workers would be hauled off site and disposed of in a facility designed for waste.
- g) No impact; no solid waste would be generated.

CHAPTER 4 – MANDATORY FINDINGS OF SIGNIFICANCE

Would the project	Potentially Significant Impact	Less than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Have the potential to eliminate important examples of the major periods of California history or prehistory?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means the incremental effects of a project are considerable when viewed in connection with the effects of past projects, other current projects, and probable future projects.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Have environmental effects that would cause substantial adverse effects on humans, either directly or indirectly?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

DISCUSSION

- a) The proposed project was evaluated for potential significant adverse impacts to the natural environment and its plant and animal communities. It has been determined that the proposed project has the potential to temporarily degrade the quality of the environment and adversely affect special-status animal species. However, full implementation of all mitigation measures incorporated into this project will avoid or reduce these potential impacts to a less than significant level.
- b) The proposed project has been evaluated for potential significant impacts to cultural resources of the Park and its immediate environment. It has been determined that,

with implementation of all proposed mitigation measures, no examples of significant cultural resources will be significantly impacted by the project. Less than significant impact with mitigation measures.

- c) CSP conducts other restoration projects in this Park to reduce deleterious impacts to the environment. These include exotic plant control, instream restoration, revegetation, and the removal of relic timber roads. The implementation of these projects are evaluated to assure that they will not result in significant adverse direct, indirect, or cumulative effects on the environment. The incremental effects of the project are insignificant when viewed in connection with the effects of past projects, other current projects, and probably future projects. By spreading out forest restoration projects over time and in different locations, cumulative adverse effects in any given subwatershed are expected to be minimal. Full implementation of all mitigation measures incorporated into this project will reduce its impacts to a less than significant level. Impacts from environmental issues addressed in this evaluation do not overlap with additional planned projects in such a way as to result in cumulative adverse impacts that are greater than the sum of the parts.

The cumulative effect of forest restoration in a watershed reduces longer-term chronic high levels of sediment delivered to streams, and reduces temperatures in sensitive coastal streams. There is not likely to be any additional adverse impact resulting from the effects of forest restoration. This project will result in a less than significant impact with mitigation.

- d) All of the environmental effects have been determined to pose a less than significant impact on humans. The project is designed to reduce adverse effects to humans to the greatest extent possible. Potential impacts would be reduced to a less than significant level if all mitigation and project requirements are fully integrated into the project.

CHAPTER 5 – SUMMARY OF MITIGATION MEASURES

The following mitigation measures would be implemented by CSP as part of the Mill Creek Watershed Young Forest Restoration Project in the DNCRSP.

MITIGATION MEASURE BIOLOGICAL 1 – SENSITIVE PLANTS

Avoidance is the primary means of mitigation for plants listed as Rare, Threatened, and Endangered, or which occur on the CNPS Lists 1A, 1B or 2 (see below). These measures are dependent on the species natural history and the potential for adverse effects or take. CNPS List 3 and 4 plants will be avoided when feasible; however, mitigation will not be required.

Species Name	Common Name	Mitigation
		WETLAND SHADE ASSOCIATED SPECIES
<i>Mitella caulescens</i>	leafy-stemmed mitrewort	A 75-foot equipment exclusion zone shall be established around plants or populations. Within this buffer the overstory canopy shall not be altered or removed nor shall the hydrology associated with the habitat be altered.
<i>Coptis laciniata</i>	Oregon goldthread	
<i>Sanguisorba officinalis</i>	great burnet	
		WETLAND ASSOCIATED SPECIES
<i>Calamagrostis crassiglumis</i>	Thurber's reed grass	A 25-foot equipment exclusion zone shall be established around plants or populations. The hydrology associated with this habitat shall not be altered.
<i>Carex leptalea</i>	flaccid sedge	
<i>Carex praticola</i>	northern meadow sedge	
<i>Carex serpenticola</i>	serpentine sedge	
<i>Carex viridula</i> var. <i>viridula</i>	green sedge	
<i>Castilleja miniata</i> ssp. <i>elata</i>	Siskiyou paintbrush	
<i>Epilobium oreganum</i>	Oregon fireweed	
<i>Lathyrus palustris</i>	marsh pea	
<i>Montia howellii</i>	Howell's montia	
<i>Packera Hesperia</i>	western ragwort	
<i>Pinguicula macroceras</i>	horned butterwort	
<i>Potamogeton foliosus</i> ssp. <i>fibrillosus</i>	fibrous pondweed	
<i>Sagittaria sanfordii</i>	Sanford's arrowhead	
<i>Viola palustris</i>	alpine marsh violet	
<i>Viola primulifolia</i> ssp. <i>occidentalis</i>	western white bog violet	

		FOREST SHADE ASSOCIATED SPECIES
<i>Asarum marmoratum</i>	marbled wild ginger	A 75-foot equipment exclusion zone shall be established around plants or populations. Within this buffer the overstory canopy shall not be altered or removed.
<i>Erythronium hendersonii</i>	Henderson's fawn lilly	
<i>Erythronium howellii</i>	Howell's fawn lilly	
<i>Erythronium oregonum</i>	giant fawn lily	
<i>Erythronium revolutum</i>	coast fawn lily	
<i>Fissidens pauperculus</i>	minute pocket moss	
<i>Gentiana setigera</i>	Mendocino gentian	
<i>Lewisia oppositifolia</i>	opposite-leaved lewisia	
<i>Monotropa uniflora</i>	ghost-pipe	
<i>Packera bolanderi</i> var. <i>bolanderi</i>	seacoast ragwort	
<i>Piperia candida</i>	white-flowered rein orchid	
<i>Cascadia nuttallii</i>	Nuttall's saxifrage	

		FOREST AND SCRUB ASSOCIATED SPECIES
<i>Arabis koehleri</i> var. <i>stipitata</i>	Koehler's stipitate rock cress	A 25-foot equipment exclusion zone shall be established around plants or populations.
<i>Arabis macdonaldiana</i>	McDonald's rock cress	
<i>Asplenium trichomanes</i> ssp. <i>trichomanes</i>	maidenhair spleenwort	
<i>Boschniakia hookeri</i>	small groundcone	
<i>Cardamine nuttallii</i> var. <i>gemmata</i>	yellow-tubered toothwort	
<i>Eriogonum pendulum</i>	Waldo wild buckwheat	
<i>Gilia capitata</i> ssp. <i>pacifica</i>	Pacific gilia	
<i>Lilium occidentale</i>	western lily	
<i>Lomatium martindalei</i>	Coast Range lomatium	
<i>Minuartia howellii</i>	Howell's sandwort	
<i>Oenothera wolfii</i>	Wolf's evening primrose	
<i>Polemonium carneum</i>	Oregon polemonium	
<i>Pyrrocoma racemosa</i> var. <i>congesta</i>	Del Norte pyrrocoma	
<i>Sidalcea malachroides</i>	Maple-leaved checkerbloom	
<i>Sidalcea malviflora</i> spp. <i>patula</i>	Siskiyou checkerbloom	
<i>Sidalcea oregana</i> spp. <i>eximia</i>	Coast checkerbloom	
<i>Silene serpentinicola</i>	serpentine catchfly	
<i>Streptanthus howellii</i>	Howell's jewelflower	
<i>Thermopsis robusta</i>	Robust false lupine	

MITIGATION MEASURE BIOLOGICAL 2 – NORTHERN SPOTTED OWL

1. No operations shall occur unless a valid NSO technical assistance has been obtained from the U.S. Fish & Wildlife Service (Service).
2. Surveys for the NSO shall be conducted in conformance with accepted Service approved NSO survey protocols. A map showing the location(s) of known (if any) NSO activity centers within the project area or affected by the project during the past 3 years shall be provided. An activity center is defined as a site(s) identified through surveys conducted to protocol resulting in either the presence of nesting, pair status, or resident single status as defined in the northern spotted owl protocol (USFWS 1992). The final determination of an activity center is at the discretion of the Service.
3. If any known activity centers occur within 0.25 mile of the proposed action then the following standard protection measures shall apply.
 - a) A buffer zone for NSO's shall be established within a 1,000 foot radius of a tree or trees containing a nest or supporting an activity center during the NSO's critical nesting period which occurs from February 1 through August 31.
 - b) No operations shall occur within a 500-foot radius of an activity center. Within the 500 foot to 1,000 foot spatial buffer the minimum habitat requirements of functional roosting habitat (minimum 60% canopy, avg. stand trees >11" dbh) shall be maintained.

MITIGATION MEASURE BIOLOGICAL 3 - RAPTORS

1. Prior to the start of project-related work a CSP inspector shall be instructed in the identification of raptor nests (both occupied and unoccupied) and raptor breeding behavior by the District's Senior Environmental Scientist or his designee. During operations the inspector shall be responsible for assuring that no raptor nests are impacted by the proposed treatments by implementing the following measures:
2. If an unoccupied raptor nest is detected (during the critical nesting period of January 15 through August 31), the nest tree and surrounding screen trees will not be disturbed and the location shall immediately be reported to the Senior Environmental Scientist.
3. If an occupied raptor nest is detected in the project area, the CSP inspector will cease operations within ¼ mile of the raptor nest and immediately notify the Senior Environmental Scientist. The Senior Environmental Scientist or his designee will then determine the species of raptor and the following measures.
4. All trees with nests and appropriate screening trees will be retained.

Species Name¹	Critical Nesting Period	Temporal² (Disturbance) Buffer	Spatial³ (Habitat) Buffer
ACCIPITRIDAE			
Cooper's Hawk	March 1 – August 31	400 m (0.25 mile)	30 m (100 ft.)
Sharp-shinned Hawk	March 1 – August 31	400 m (0.25 mile)	30 m (100 ft.)
Osprey	February 15 – August 31	400 m (0.25 mile)	30 m (100 ft.)
Redtail Hawk		400 m (0.25 mile)	15 m (50 ft.)
Red-shoulder Hawk	February 1 – August 31	400 m (0.25 mile)	15 m (50 ft.)
STRIGIFORMES			
Great Horned Owls	February 1 – August 31	400 m (0.25 mile)	30 m (100 ft.)
Cavity Nesting Owls	February 1 – August 31	400 m (0.25 mile)	30 m (100 ft.)

¹ Mitigation measures for the northern spotted owl are covered above. Other species of raptors such as the golden eagle, northern harrier, bald eagle, or long-eared owl are not expected to nest within the project area due to lack of habitat and are therefore not addressed.

² Temporal buffers are temporary buffers established around nest sites that restrict operations during the species critical nesting period.

³ Spatial buffers are permanent habitat retention buffers established around a species nest site. Until the nest site is determined to be no longer active (normally after 3 years of no use) habitat modification is not allowed within the buffer.

MITIGATION MEASURE BIOLOGICAL 4 – MARBLED MURRELET

1. Where residual trees are located within a project area or within 91 m (300 ft.) of treatment area boundaries, DPR shall consult with the California Department of Fish & Game (DFG) and the Service to determine if the trees constitute potential marbled murrelet nesting habitat.
2. No operations shall occur within 300 feet of occupied or suitable marbled murrelet nesting habitat without DFG consultation.
3. No operations shall occur within 0.25 miles of areas known to be occupied by marbled murrelets during the critical nesting season (March 24 – September 15).
4. No operations shall occur within 0.25 miles of potential marbled murrelet habitat during the critical nesting season unless surveys conducted to protocol have determined that the area is not utilized or occupied by marbled murrelets. This will also trigger consultation with the DFG and technical assistance with the Service.

MITIGATION MEASURE BIOLOGICAL 5 – AMPHIBIANS AND FISH

1. Areas that provide potential habitat for the Del Norte salamander shall be identified and mapped prior to operations. Spatial buffers that retain the microhabitat of the sites shall be established around areas identified as potential habitat for the Del Norte salamander. The minimum buffer for these sites shall be 15 m (50 ft); however, site specific measures can be developed through consultation with the District's Senior Environmental Scientist and the California Department of Fish & Game provided that the measures are then amended into the MND.
2. No operations will occur 18 m (60 ft) of Class 1 or 2 watercourses
3. No operations will occur within the channel of Class 3 watercourses.

MITIGATION MEASURE CULTURAL 1

1. Cultural resources, including historical and archaeological resources, will be inventoried prior to operations within the project area. A PRC 5024 document shall be completed. A Cultural Resource Investigation report will be prepared by a DPR Archaeologist with direct oversight by State Park Cultural Resource staff prior to any construction activities.
2. Any historic or prehistoric archaeological sites encountered in subsequent archaeological surveys will be flagged with a 10-meter buffer with black and yellow candy-striped flagging for avoidance during project implementation.

CHAPTER 6 – SUMMARY OF MONITORING PLAN

Two types of monitoring, compliance and effectiveness, may be carried out in conjunction with the activities proposed under the Young Forest Restoration Plan.

COMPLIANCE MONITORING

Compliance monitoring will occur during all phases of the implementation of the restoration plan. State Park Natural Resource personnel (inspectors) will accompany contractors during operations and will be responsible for assuring that all conditions and mitigations listed in this plan and the subsequent Mitigated Negative Declaration are adhered to. Inspectors will be required to complete daily activity logs documenting the work conducted by the contractors. If CSP determines that work is not in compliance then the contractors, project manager, and the Senior Environmental Scientist will be notified so that corrective measures can be taken. If problems continue, work will cease while the project is reevaluated and workers are instructed on measures necessary to improve work standards. Persistent difficulties will result in termination of the contract.

Reports will be filed annually with CSP North Coast Redwoods District headquarters and will summarize the quality and quantity of work accomplished. Any difficulties regarding compliance with the terms of the Mill Creek Watershed Young Forest Restoration Project MND will be noted along with recommendations to improve future efforts.

EFFECTIVENESS MONITORING

In 2006, the Mill Creek Forest Monitoring Plan was developed to monitor the effectiveness of stands treated in the 1980- 1993 age class. Sixty permanent plots (15 in each prescription type and 15 in control areas with no treatment) were established and will be periodically remeasured as needed to measure change. Plot design and implementation methods are discussed in Section 8 of the restoration plan (Appendix D). Stands treated under the Young Forest Restoration Project are similar in condition to the 1980-1993 stands when they were treated, therefore additional monitoring plots will not be required for this project unless prescriptions that are significantly different from those already being monitored are implemented or the sample size is determined to be inadequate to compare prescriptions for the purpose of improving future restoration efforts.

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CHAPTER 8 – REPORT PREPARATION

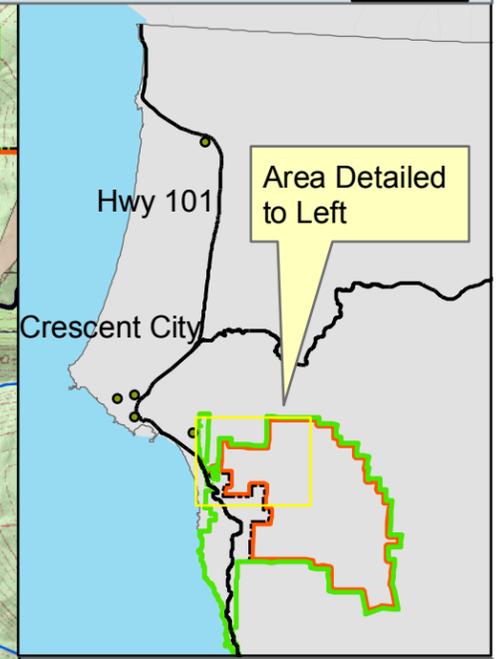
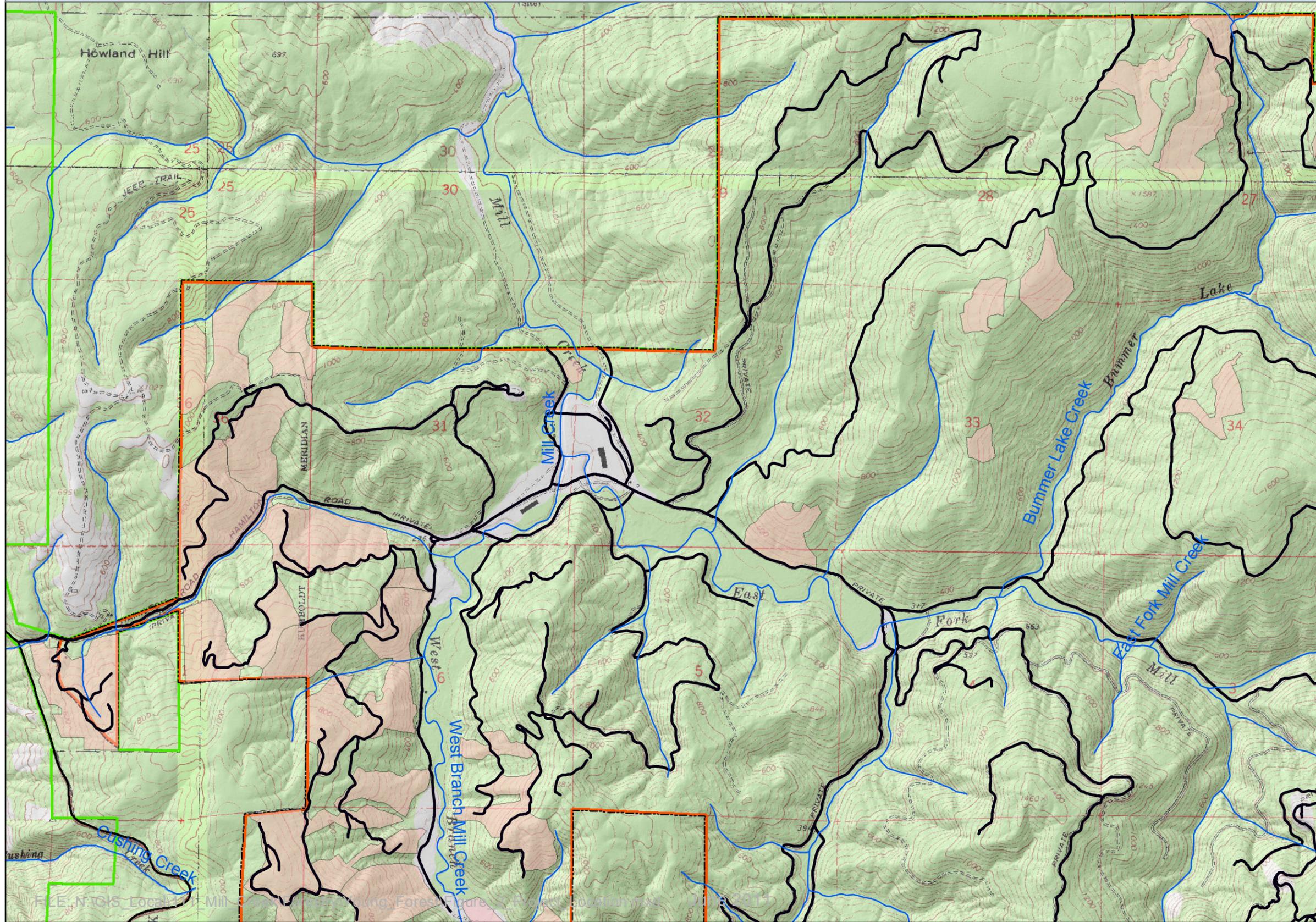
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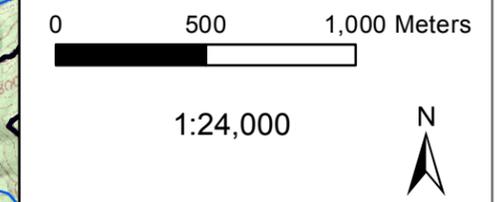
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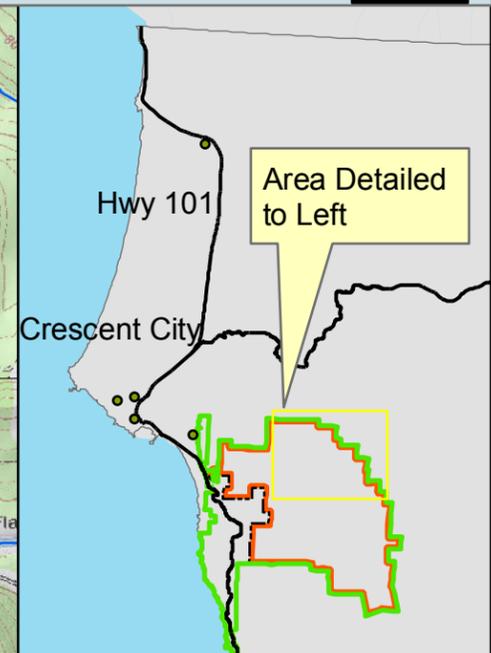
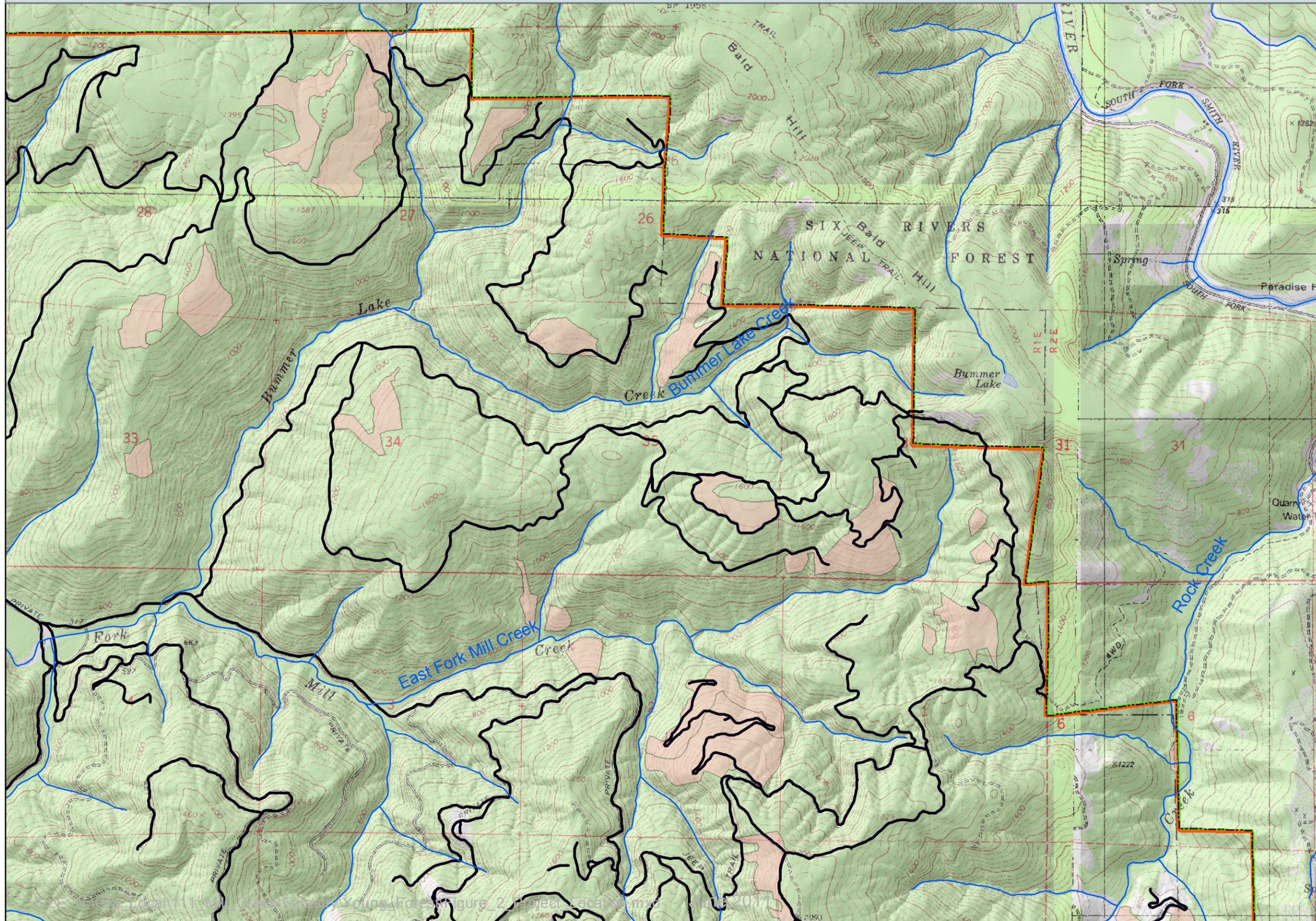
APPENDIX A – MAPS



- Legend**
- Streams
 - Driveable Roads
 - Proposed Treatment Areas
 - Mill Creek Watershed Boundary
 - Del Norte Coast Redwoods State Park



Young Forest Restoration Project
Figure 1
Project Location NW



Legend

- Streams
- Driveable Roads
- Proposed Treatment Areas
- Mill Creek Watershed Boundary
- Del Norte Coast Redwoods State Park

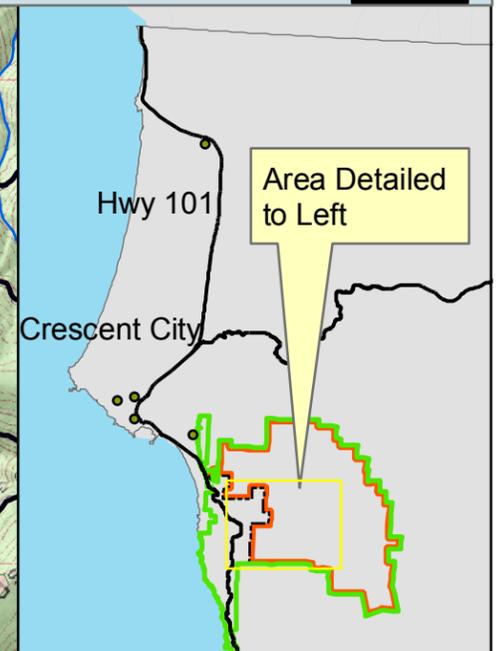
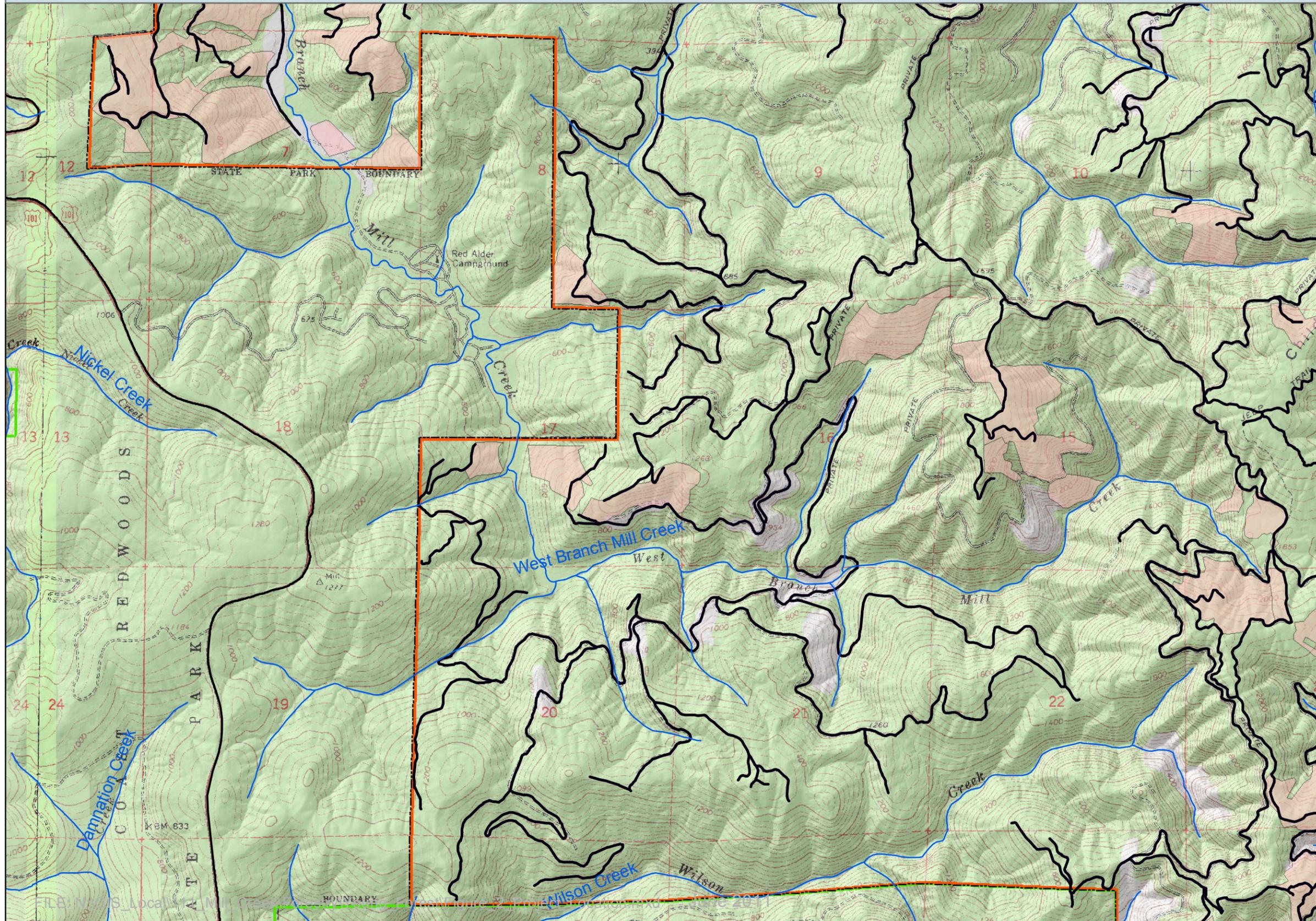
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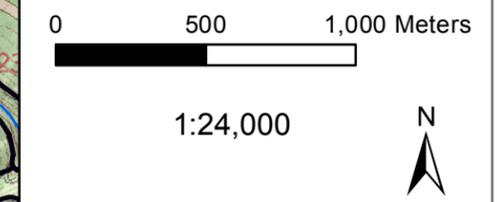
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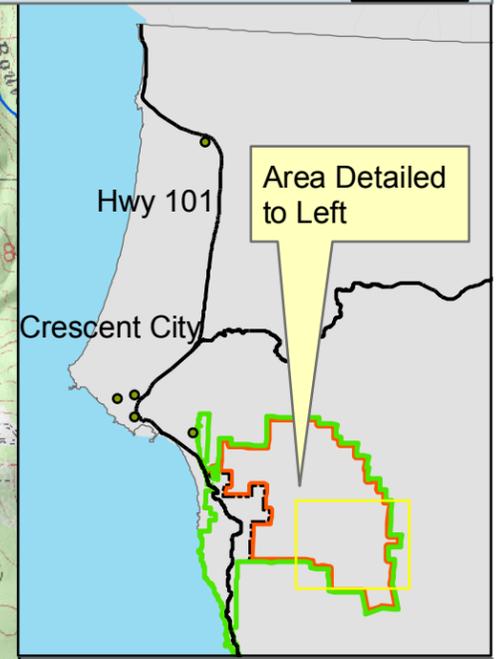
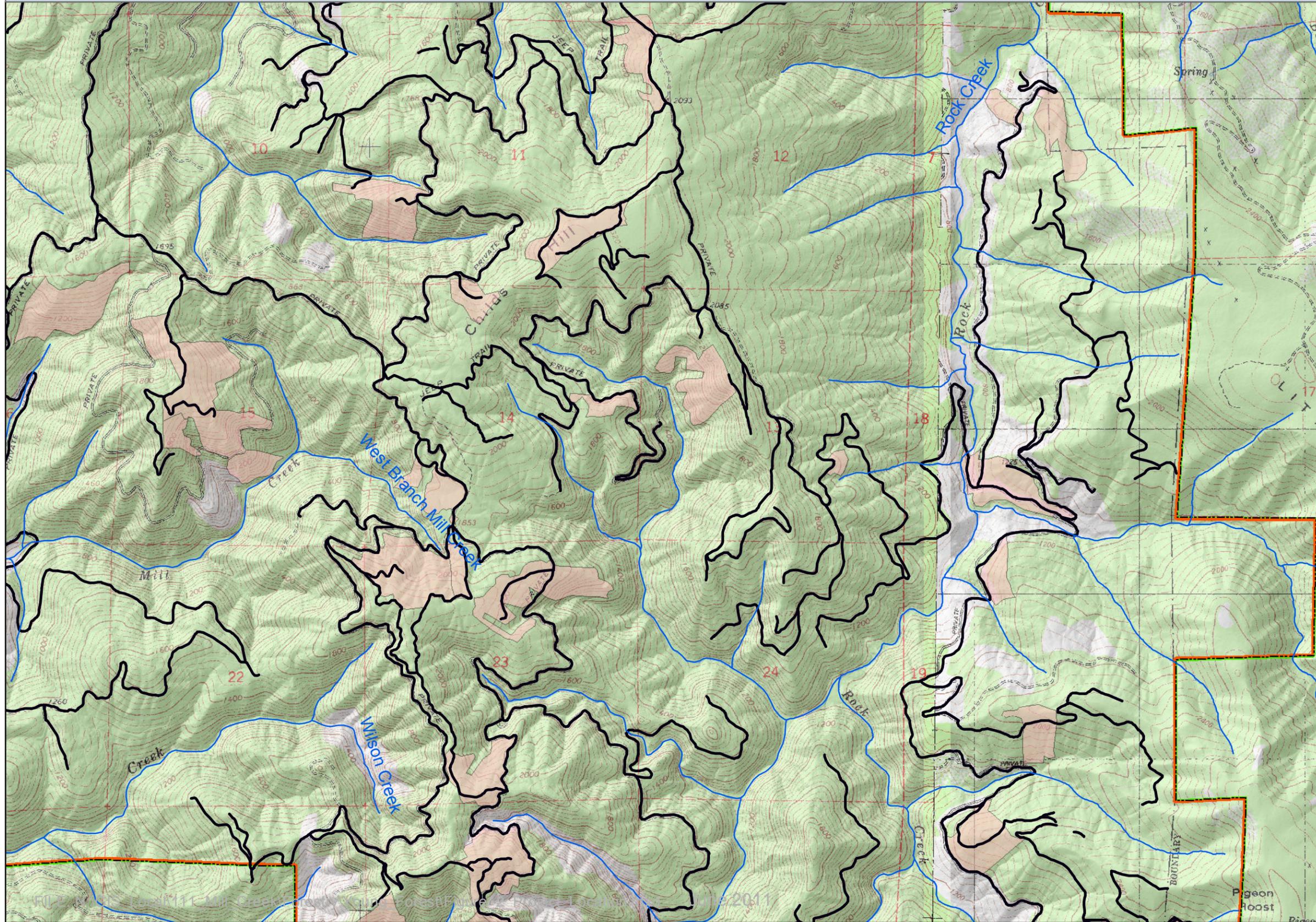
Young Forest Restoration Project
Figure 2
Project Location NE



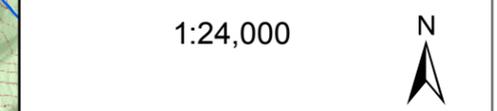
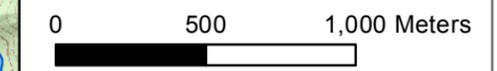
- Legend**
- Streams
 - Driveable Roads
 - Proposed Treatment Areas
 - Mill Creek Watershed Boundary
 - Del Norte Coast Redwoods State Park



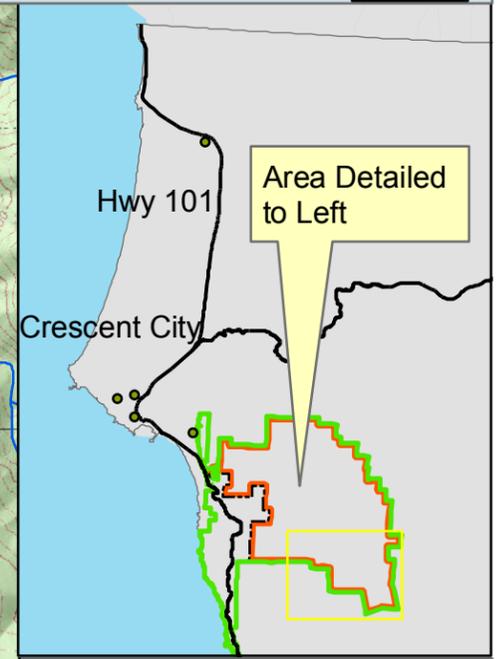
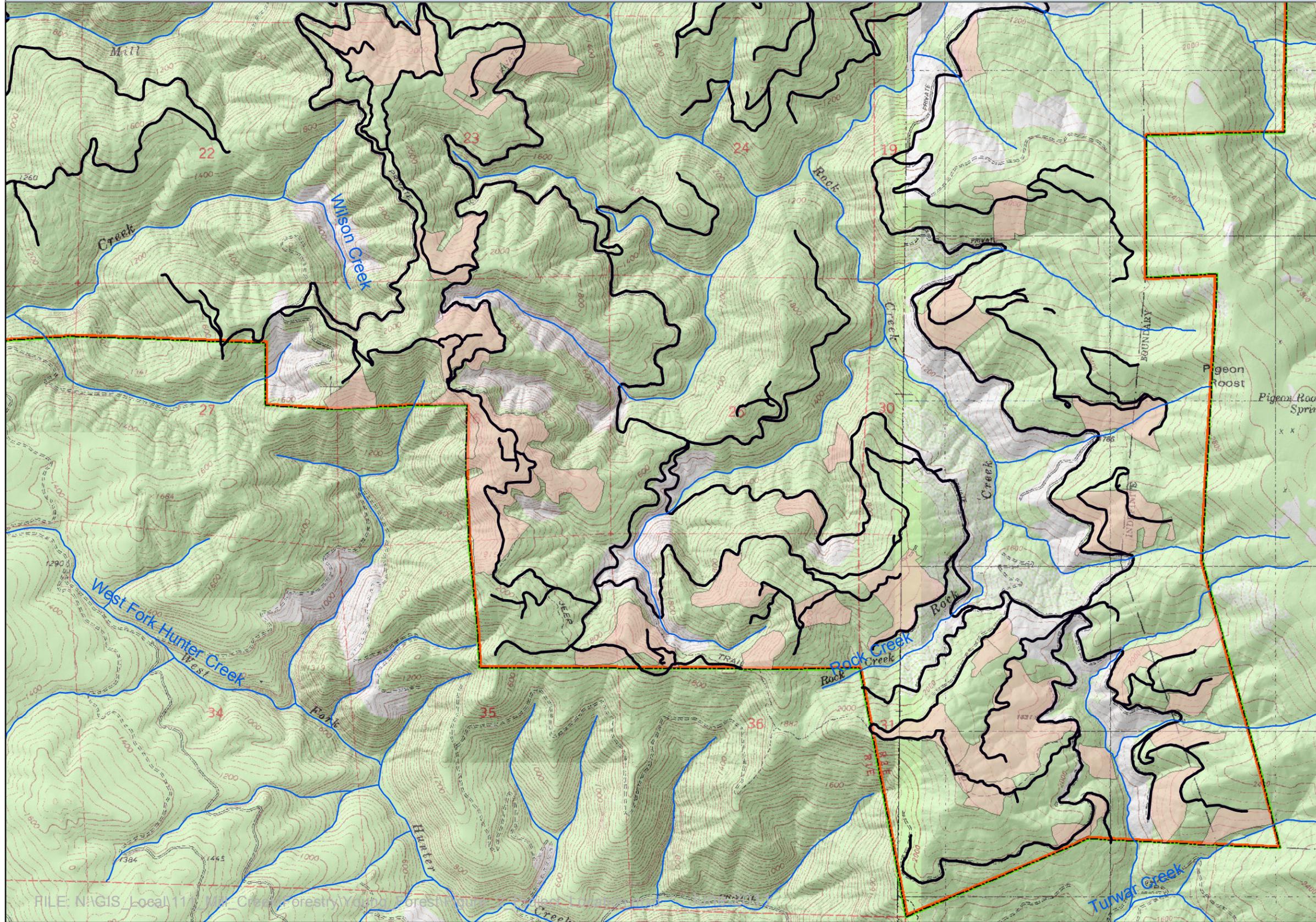
Young Forest Restoration Project
Figure 3
Project Location SW



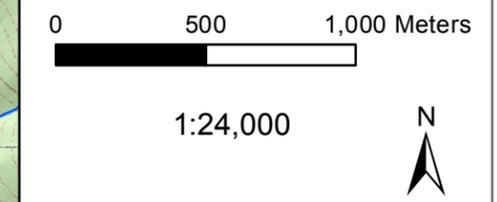
- Legend**
- Streams
 - Driveable Roads
 - Proposed Treatment Areas
 - Mill Creek Watershed Boundary
 - Del Norte Coast Redwoods State Park



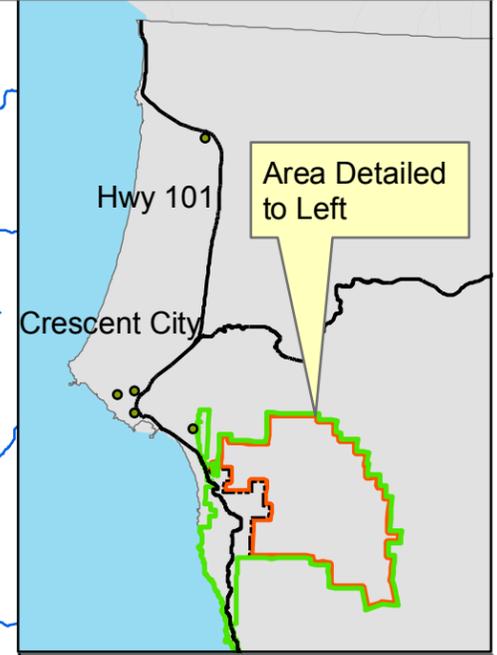
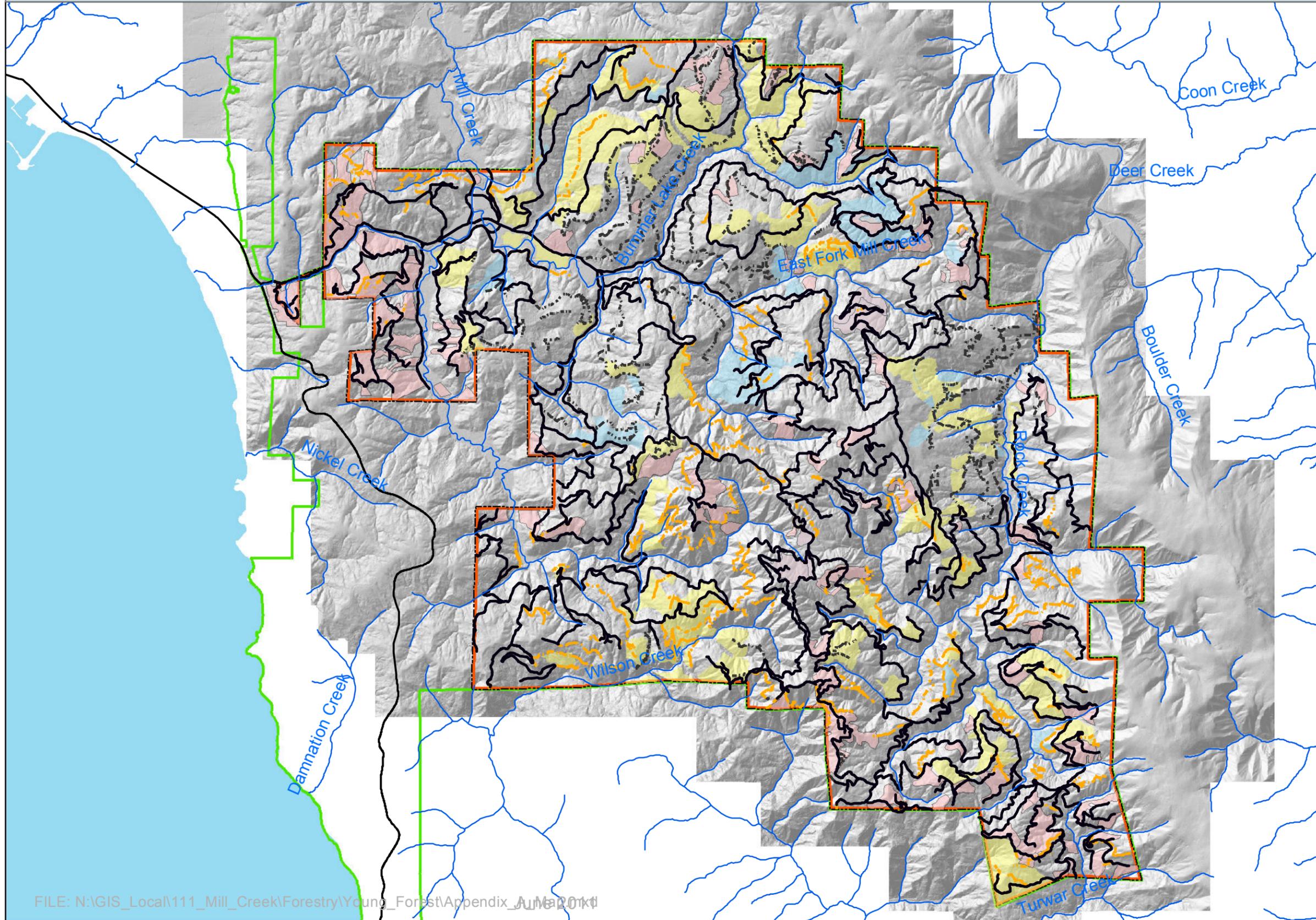
Young Forest Restoration Project
Figure 4
Project Location East



- Legend**
- Streams
 - Driveable Roads
 - Proposed Treatment Areas
 - Mill Creek Watershed Boundary
 - Del Norte Coast Redwoods State Park



Young Forest Restoration Project
Figure 5
Project Location SE



- Legend**
- Proposed Treatment Areas
 - Treated 2003-2010
 - Permitted Treatment Areas
 - Driveable Roads
 - Removed Roads
 - Planned for Removal
 - Streams
 - Del Norte Coast Redwoods State Park
 - Mill Creek Watershed Boundary



Young Forest Restoration Project
Figure 6
Cumulative Impacts

APPENDIX B – SPECIES LIST: PLANTS

Appendix B: Sensitive plant species occurring in the assessment area. Assessment area defined as the USGS 7.5' quadrangle within which the project is located (Childs Hill) and the seven quadrangles that surround it (Crescent City, Sister Rocks, Cant Hook Mountain, Gasquet, Hiouchi, Requa, and Klamath Glen) (CNPS 2011). F = federal designation, S = state designation, CNPS = CNPS rare plant rank.

Species	Status			Habitat	Comments
	F	S	CNPS		
<i>Arctostaphylos nortensis</i> <i>Del Norte manzanita</i>			4.3	Often serpentinite. Chaparral, Lower montane coniferous forest 500-800 m	Known to occur in MCW
<i>Arnica cernua</i> <i>serpentine arnica</i>			4.3	Lower montane coniferous forest (serpentinite) 500-1920 m	Known to occur in MCW
<i>Castilleja brevilobata</i> <i>short-lobed paintbrush</i>			4.2	Lower montane coniferous forest (serpentinite, edges and openings) 120-1700 m	Known to occur in MCW.
<i>Darlingtonia californica</i> <i>California pitcherplant</i>			4.2	Mesic, generally serpentinite seeps. Bogs and fens, Meadows and seeps 0-2585 m	Known to occur in MCW.
<i>Horkelia sericata</i> <i>Howell's horkelia</i>			4.3	Serpentinite, clay. Chaparral, Lower montane coniferous forest 60-1200 m	Known to occur in MCW
<i>Iris innominata</i> <i>Del Norte County iris</i>			4.3	Lower montane coniferous forest (serpentinite) 300-2000 m	Known to occur in MCW
<i>Lathyrus delnorticus</i> <i>Del Norte pea</i>			4.3	Often serpentinite. Lower montane coniferous forest, North Coast coniferous forest 30-1450 m	Known to occur in MCW.
<i>Lilium bolanderi</i>			4.2	Serpentinite. Chaparral, Lower	Known to occur in

<i>Bolander's lily</i>				montane coniferous forest 30-1600 m	MCW.
<i>Listera cordata</i> <i>heart-leaved twayblade</i>			4.2	Bogs and fens, Lower montane coniferous forest, North Coast coniferous forest 5-1370 m	Known to occur in MCW.
<i>Lomatium howellii</i> <i>Howell's lomatium</i>			4.3	Serpentinite. Chaparral, Lower montane coniferous forest 110-1705 m	Known to occur in MCW.
<i>Mitella caulescens</i> <i>leafy-stemmed mitrewort</i>			4.2	Mesic, sometimes roadsides. Broadleaved upland forest, Lower montane coniferous forest, Meadows and seeps, North Coast coniferous forest 5-1700 m	Known to occur in MCW.
<i>Oxalis suksdorfii</i> <i>Suksdorf's wood-sorrel</i>			4.3	Broadleaved upland forest, North Coast coniferous forest 15-700 m	Known to occur in MCW.
<i>Piperia candida</i> <i>white-flowered rein orchid</i>			1B.2	Sometimes serpentinite. Broadleaved upland forest, Lower montane coniferous forest, North Coast coniferous forest 30-1310 m	Known to occur in MCW.
<i>Pleuropogon refractus</i> <i>nodding semaphore grass</i>			4.2	Mesic. Lower montane coniferous forest, Meadows and seeps, North Coast coniferous forest, Riparian forest	Known to occur in MCW
<i>Sidalcea malachroides</i> <i>maple-leaved checkerbloom</i>			4.2	Often in disturbed areas. Broadleaved upland forest, Coastal prairie, Coastal scrub, North Coast coniferous forest, Riparian woodland 2-730 m	Known to occur in MCW.

<i>Antennaria suffrutescens</i> <i>evergreen everlasting</i>			4.3	Lower montane coniferous forest (serpentinite) 500-1600 m	Potential to occur; habitat present in project area.
<i>Arabis koehleri</i> var. <i>stipitata</i> <i>Koehler's stipitate rock cress</i>			1B.3	Serpentinite, rocky: Chaparral, Lower montane coniferous forest 155-1660 m	Potential to occur; habitat present in project area.
<i>Arabis mcdonaldiana</i> <i>McDonald's rock cress</i>	FE	CE	1B.1	Serpentinite: Lower montane coniferous forest, Upper montane coniferous forest 135-1800 m	Potential to occur; habitat present in project area.
<i>Arctostaphylos hispidula</i> <i>Howell's manzanita</i>			4.2	Chaparral (serpentinite or sandstone) 120-1250 m	Potential to occur; habitat present in project area.
<i>Arnica spathulata</i> <i>Klamath arnica</i>			4.3	Lower montane coniferous forest (serpentinite) 640-1800 m	Potential to occur; habitat present in project area.
<i>Asplenium trichomanes</i> ssp. <i>trichomanes</i> <i>maidenhair spleenwort</i>			2.3	Lower montane coniferous forest (rocky) 185-200 m	Potential to occur; habitat present in project area.
<i>Calamagrostis foliosa</i> <i>leafy reed grass</i>		CR	4.2	Rocky. Coastal bluff scrub, North Coast coniferous forest 0-1220 m	Potential to occur; habitat present in project area.
<i>Carex leptalea</i> <i>bristle-stalked sedge</i>			2.2	Bogs and fens, Meadows and seeps (mesic), Marshes and swamps 0-700 m	Potential to occur; habitat present in project area.
<i>Carex praticola</i> <i>northern meadow sedge</i>			2.2	Meadows and seeps (mesic) 0-3200 m	Potential to occur; habitat present in project area.
<i>Carex serpenticola</i> <i>serpentine sedge</i>			2.3	Meadows and seeps (mesic, serpentinite) 60-1200	Potential to occur; habitat present in project area.
<i>Carex viridula</i> var. <i>viridula</i>			2.3	Bogs and fens, Marshes and	Potential to occur;

<i>green yellow sedge</i>				swamps (freshwater), North Coast coniferous forest (mesic) 0-1600 m	habitat present in project area.
<i>Calystegia atriplicifolia ssp. buttensis</i> <i>Butte County morning-glory</i>			4.2	Rocky, sometimes roadside. Chaparral, Lower montane coniferous forest 565-1524 m	Potential to occur; habitat present in project area.
<i>Cardamine nuttallii var. gemmata</i> <i>yellow-tubered toothwort</i>			1B.3	Serpentinite. Lower montane coniferous forest, North Coast coniferous forest 100-700 m	Potential to occur; habitat present in project area.
<i>Cascadia nuttallii</i> <i>Nuttall's saxifrage</i>			2.1	North Coast coniferous forest (mesic, rocky) 40-75 m	Potential to occur; habitat present in project area.
<i>Castilleja miniata ssp. elata</i> <i>Siskiyou paintbrush</i>			2.2	Often serpentinite. Bogs and fens, Lower montane coniferous forest (seeps) 0-1750 m	Potential to occur; habitat present in project area.
<i>Coptis laciniata</i> <i>Oregon goldthread</i>			2.2	Mesic. Meadows and seeps, North Coast coniferous forest (streambanks) 0-1000 m	Potential to occur; habitat present in project area.
<i>Cypripedium californicum</i> <i>California lady's-slipper</i>			4.2	Seeps and streambanks, usually serpentinite. Bogs and fens, Lower montane coniferous forest 30-2750 m	Potential to occur; habitat present in project area.
<i>Eriogonum pendulum</i> <i>Waldo wild buckwheat</i>			2.2	Serpentinite. Lower montane coniferous forest, Upper montane coniferous forest 230-1000 m	Potential to occur; habitat present in project area.
<i>Erythronium hendersonii</i> <i>Henderson's fawn lily</i>			2.3	Lower montane coniferous forest 300-1600 m	Potential to occur; habitat

					present in project area.
<i>Erythronium howellii</i> <i>Howell's fawn lily</i>			1B.3	Sometimes serpentinite. Lower montane coniferous forest, North Coast coniferous forest 200-1145 m	Potential to occur; habitat present in project area.
<i>Erythronium oregonum</i> <i>giant fawn lily</i>			2.2	Sometimes serpentinite, rocky, openings. Cismontane woodland, Meadows and seeps 100-1150 m	Potential to occur; habitat present in project area.
<i>Erythronium revolutum</i> <i>coast fawn lily</i>			2.2	Mesic, streambanks. Bogs and fens, Broadleafed upland forest, North Coast coniferous forest 0-1600 m	Potential to occur; habitat present in project area.
<i>Fissidens pauperculus</i> <i>minute pocket moss</i>			1B.2	North Coast coniferous forest (damp coastal soil) 10-1024 m	Potential to occur; habitat present in project area.
<i>Gentiana setigera</i> <i>Mendocino gentian</i>			1B.2	Mesic. Lower montane coniferous forest, Meadows and seeps 490-1065 m	Potential to occur; habitat present in project area.
<i>Gilia capitata ssp. pacifica</i> <i>Pacific gilia</i>			1B.2	Coastal bluff scrub, Chaparral (openings), Coastal prairie, Valley and foothill grassland 5-869 m	Potential to occur; habitat present in project area.
<i>Iris bracteata</i> <i>Siskiyou iris</i>			3.3	Serpentinite. Broadleafed upland forest, Lower montane coniferous forest 180-1070 m	Potential to occur; habitat present in project area.
<i>Iris tenax ssp. klamathensis</i> <i>Orleans iris</i>			4.3	Lower montane coniferous forest (often in disturbed areas) 100-1400 m	Potential to occur; habitat present in project area.
<i>Lathyrus palustris</i> <i>marsh pea</i>			2.2	Mesic. Bogs and fens, Coastal prairie, Coastal scrub, Lower montane coniferous forest,	Potential to occur; habitat present in project area.

				Marshes and swamps, North Coast coniferous forest 1-100 m	
<i>Lewisia oppositifolia</i> <i>opposite-leaved lewisia</i>			2.2	Lower montane coniferous forest (mesic) 300-1220 m	Potential to occur; habitat present in project area.
<i>Lilium kelloggii</i> <i>Kellogg's lily</i>			4.3	Openings, roadsides. Lower montane coniferous forest, North Coast coniferous forest 3-1300 m	Potential to occur; habitat present in project area.
<i>Lilium occidentale</i> <i>western lily</i>	FE	CE	1B.1	Bogs and fens, Coastal bluff scrub, Coastal prairie, Coastal scrub, Marshes and swamps (freshwater), North Coast coniferous forest (openings) 2-185 m	Potential to occur; habitat present in project area.
<i>Lilium pardalinum ssp. vollmeri</i> <i>Vollmer's lily</i>			4.3	Bogs and fens, Meadows and seeps (mesic) 30-1680 m	Potential to occur; habitat present in project area.
<i>Lomatium martindalei</i> <i>Coast Range lomatium</i>			2.3	Coastal bluff scrub, Lower montane coniferous forest, Meadows and seeps 240-3000 m	Potential to occur; habitat present in project area.
<i>Lycopodium clavatum</i> <i>running-pine</i>			4.1	Often edges, openings, and roadsides. Lower montane coniferous forest (mesic), Marshes and swamps, North Coast coniferous forest (mesic) 45-1225 m	Potential to occur; habitat present in project area.
<i>Minuartia howellii</i> <i>Howell's sandwort</i>			1B.3	Serpentinite, xeric. Chaparral, Lower montane coniferous forest 550-1000 m	Potential to occur; habitat present in project area.
<i>Monotropa uniflora</i>			2.2	Broadleafed upland forest, North	Potential to occur;

<i>ghost-pipe</i>				Coast coniferous forest 10-550 m	habitat present in project area.
<i>Oenothera wolfii</i> <i>Wolf's evening-primrose</i>			1B.1	Sandy, usually mesic. Coastal bluff scrub, Coastal dunes, Coastal prairie, Lower montane coniferous forest 3-800 m	Potential to occur; habitat present in project area.
<i>Packera bolanderi</i> var. <i>bolanderi</i> <i>seacoast ragwort</i>			2.2	Sometimes roadsides. Coastal scrub, North Coast coniferous forest 30-650 m	Potential to occur; habitat present in project area.
<i>Packera hesperia</i> <i>western ragwort</i>			2.2	Serpentinite. Meadows and seeps, Upper montane coniferous forest 500-2500 m	Potential to occur; habitat present in project area.
<i>Perideridia gairdneri</i> ssp. <i>gairdneri</i> <i>Gairdner's yampah</i>			4.2	Vernally mesic. Broadleafed upland forest, Chaparral, Coastal prairie, Valley and foothill grassland, Vernal pools 0-365 m	Potential to occur; habitat present in project area.
<i>Pinguicula macroceras</i> <i>horned butterwort</i>			2.2	Bogs and fens (serpentinite) 40-1920 m	Potential to occur; habitat present in project area.
<i>Pityopus californica</i> <i>California pinefoot</i>			4.2	Mesic. Broadleafed upland forest, Lower montane coniferous forest, North Coast coniferous forest, Upper montane coniferous forest 15-2225 m	Potential to occur; habitat present in project area.
<i>Polemonium carneum</i> <i>Oregon polemonium</i>			2.2	Coastal prairie, Coastal scrub, Lower montane coniferous forest 0-1830 m	Potential to occur; habitat present in project area.
<i>Potamogeton foliosus</i> ssp. <i>fibrillosus</i> <i>fibrous pondweed</i>			2.3	Marshes and swamps (assorted shallow freshwater) 5-1300 m	Potential to occur; habitat present in project area.

<i>Pyrocoma racemosa</i> var. <i>congesta</i> <i>Del Norte pyrocoma</i>			2.3	Serpentinite. Chaparral, Lower montane coniferous forest 200-1000 m	Potential to occur; habitat present in project area.
<i>Ribes laxiflorum</i> <i>trailing black currant</i>			4.3	Sometimes roadside. North Coast coniferous forest 5-1395 m	Potential to occur; habitat present in project area.
<i>Sagittaria sanfordii</i> <i>Sanford's arrowhead</i>			1B.2	Marshes and swamps (assorted shallow freshwater) 0-650 m	Potential to occur; habitat present in project area.
<i>Salix delnortensis</i> <i>Del Norte willow</i>			4.3	Riparian forest (serpentinite) 90-500 m	Potential to occur; habitat present in project area.
<i>Sanguisorba officinalis</i> <i>great burnet</i>			2.2	Often serpentinite. Bogs and fens, Broadleafed upland forest, Meadows and seeps, Marshes and swamps, North Coast coniferous forest, Riparian forest 60-1400 m	Potential to occur; habitat present in project area.
<i>Sanicula peckiana</i> <i>Peck's sanicle</i>			4.3	Often serpentinite. Chaparral, Lower montane coniferous forest 150-800 m	Potential to occur; habitat present in project area.
<i>Sidalcea malviflora</i> ssp. <i>patula</i> <i>Siskiyou checkerbloom</i>			1B.2	Often roadcuts. Coastal bluff scrub, Coastal prairie, North Coast coniferous forest 15-878 m	Potential to occur; habitat present in project area.
<i>Sidalcea oregana</i> ssp. <i>eximia</i> <i>coast checkerbloom</i>			1B.2	Lower montane coniferous forest, Meadows and seeps, North Coast coniferous forest 5-1340 m	Potential to occur; habitat present in project area.
<i>Silene serpentinicola</i> <i>serpentine catchfly</i>			1B.2	Serpentinite openings; gravelly or rocky. Chaparral, Lower montane coniferous forest 145-1650 m	Potential to occur; habitat present in project area.

<i>Streptanthus howellii</i> <i>Howell's jewel-flower</i>			1B.2	Lower montane coniferous forest (serpentinite, rocky) 305-1500 m	Potential to occur; habitat present in project area.
<i>Tauschia glauca</i> <i>glaucous tauschia</i>			4.3	Lower montane coniferous forest (gravelly, serpentinite) 80-1700 m	Potential to occur; habitat present in project area.
<i>Veratrum insolitum</i> <i>Siskiyou false-hellebore</i>			4.3	Clay. Chaparral, Lower montane coniferous forest 45-1635 m	Potential to occur, habitat present in project area.
<i>Viola palustris</i> <i>alpine marsh violet</i>			2.2	Bogs and fens (coastal), Coastal scrub (mesic) 0-150 m	Potential to occur, habitat present in project area.
<i>Viola primulifolia</i> ssp. <i>occidentalis</i> <i>western white bog violet</i>			1B.2	Bogs and fens (serpentinite), Marshes and swamps 100-990 m	Potential to occur, habitat present in project area.
<i>Angelica lucida</i> <i>sea-watch</i>			4.2	Coastal bluff scrub, Coastal dunes, Coastal scrub, Marshes and swamps (coastal salt) 0-150 m	Unlikely to occur; habitat not present in project area.
<i>Calamagrostis crassiglumis</i> <i>Thurber's reed grass</i>			2.1	Coastal scrub (mesic), Marshes and swamps (freshwater) 10-45 m	Unlikely to occur; habitat not present in project area.
<i>Carex lyngbyei</i> <i>Lyngbye's sedge</i>			2.2	Marshes and swamps (brackish or freshwater) 0-10 m	Unlikely to occur; habitat not present in project area.
<i>Castilleja affinis</i> ssp. <i>litoralis</i> <i>Oregon coast paintbrush</i>			2.2	Sandy. Coastal bluff scrub, Coastal dunes, Coastal scrub 15-100 m	Unlikely to occur; habitat not present in project area.
<i>Cochlearia officinalis</i> var. <i>arctica</i> <i>arctic spoonwort</i>			2.3	Coastal bluff scrub (on basaltic sea stack) 0-50 m	Unlikely to occur; habitat not present in project area.
<i>Discelium nudum</i> <i>naked flag moss</i>			2.2	Coastal bluff scrub (soil, on clay banks)	Unlikely to occur; habitat not present in

				10-50 m	project area.
<i>Empetrum nigrum</i> ssp. <i>hermaphroditum</i> <i>mountain crowberry</i>			2.2	Coastal bluff scrub, Coastal prairie 10-200 m	Unlikely to occur; habitat not present in project area.
<i>Eriogonum nudum</i> var. <i>paralinum</i> <i>Del Norte buckwheat</i>			2.2	Coastal bluff scrub, Coastal prairie 5-80 m	Unlikely to occur; habitat not present in project area.
<i>Hierochloa odorata</i> <i>vanilla-grass</i>			2.3	Meadows and seeps (mesic) 1500-1895 m	Unlikely to occur; habitat not present in project area.
<i>Triquetrella californica</i> <i>coastal triquetrella</i>			1B.2	Soil. Coastal bluff scrub, Coastal scrub 10-100 m	Unlikely to occur; habitat not present in project area.
<i>Vaccinium scoparium</i> <i>little-leaved huckleberry</i>			2.2	Subalpine coniferous forest (rocky) 1036-2200 m	Unlikely to occur; habitat not present in project area.
<i>Abronia umbellata</i> var. <i>breviflora</i> <i>pink sand-verbena</i>			1B.1	Coastal dunes 0-10 m	No potential to occur; habitat not present in DNCRSP.
<i>Carex lenticularis</i> var. <i>limnophila</i> <i>lagoon sedge</i>			2.2	Shores, beaches; often gravelly. Bogs and fens, Marshes and swamps, North Coast coniferous forest 0-6 m	No potential to occur; habitat not present in DNCRSP.
<i>Gilia millefoliata</i> <i>dark-eyed gilia</i>			1B.2	Coastal dunes 2-30 m	No potential to occur; habitat not present in DNCRSP.
<i>Glehnia littoralis</i> ssp. <i>leiocarpa</i> <i>American glehnia</i>			4.2	Coastal dunes 0-20 m	No potential to occur; habitat not present in DNCRSP.
<i>Hesperevax sparsiflora</i> var. <i>brevifolia</i> <i>short-leaved evax</i>			1B.2	Coastal bluff scrub (sandy), Coastal dunes 0-215 m	No potential to occur; habitat not present in DNCRSP.

<i>Lathyrus japonicus</i> <i>seaside pea</i>			2.1	Coastal dunes 1-30 m	No potential to occur; habitat not present in DNCRSP.
<i>Layia carnosa</i> <i>beach layia</i>	FE	CE	1B.1	Coastal dunes, Coastal scrub (sandy) 0-60 m	No potential to occur; habitat not present in DNCRSP.
<i>Phacelia argentea</i> <i>sand dune phacelia</i>			1B.1	Coastal dunes 3-25 m	No potential to occur; habitat not present in DNCRSP.
<i>Romanzoffia tracyi</i> <i>Tracy's romanzoffia</i>			2.3	Rocky. Coastal bluff scrub, Coastal scrub 15-30 m	No potential to occur; habitat not present in DNCRSP.
<i>Trientalis europaea</i> <i>arctic starflower</i>			2.2	Coastal. Bogs and fens, Meadows and seeps 0-15 m	No potential to occur; habitat not present in DNCRSP.
<i>Viola langsdorfii</i> <i>Langsdorf's violet</i>			2.1	Bogs and fens (coastal) 2-10 m	No potential to occur; habitat not present in DNCRSP.

APPENDIX C – SPECIES LIST: ANIMALS

Species	Status	Habitat	Comments
REPTILES AND AMPHIBIANS			
Southern torrent salamander* <i>Rhacotriton variegatus</i>	CSC	Springs, seeps, and streams in coastal redwood, Douglas-fir, mixed conifer, montane riparian and montane hardwood-conifer habitats, old growth forest.	Known to occur within DNCR
Del Norte salamander* <i>Plethodon elongatus</i>	CSC	Old growth associated mixed conifer/ hardwood habitats. Cool, moist, deep litter layer, closed multi-storied canopy dominated by large, old trees.	Known to occur within DNCR
Pacific tailed frog* <i>Ascaphus truei</i>	CSC	Montane hardwood-conifer, redwood, Douglas-fir and ponderosa pine habitats.	Known to occur within DNCR
Northern red-legged frog* <i>Rana aurora aurora</i>	CSC	Humid forests, woodlands, grasslands, and streamside in northwestern California	Known to occur within DNCR
Foothill yellow-legged frog* <i>Rana boylei</i>	CSC	Partly-shaded, shallow streams and riffles with a rocky substrate in a variety of habitats.	Known to occur within DNCR
Western pond turtle* <i>Emys marmorata</i>	CSC	Ponds, marshes, rivers, streams with aquatic vegetation and suitable basking sites. Near suitable upland (sandy banks or open grassy fields) habitat for egg-laying.	Known to occur adjacent to DNCR
BIRDS			
Sharp-shinned hawk <i>Accipiter striatus</i>	CSC	Nesting – riparian deciduous and mixed conifer habitats.	Known to occur within DNCR
Cooper's hawk <i>Accipiter cooperi</i>	CSC	Nesting – open, interrupted or marginal woodland.	Known to occur within DNCR
Golden eagle <i>Aquila chrysaetos</i>	CSC	Nesting and wintering – rolling foothill mountainous areas, sage-juniper flats, desert.	
Bald eagle <i>Haliaeetus leucocephalus</i>	FT, CE	Nesting and wintering – ocean shores, lake margins and rivers.	Known to occur within DNCR
Osprey* <i>Pandion haliaetus</i>	CSC	Nesting – ocean shores, bays, fresh-water lakes and rivers. Large tree-tops within 15 miles of fish-producing water.	Known to occur within DNCR
Peregrine falcon <i>Falco peregrinus</i>	CE	Nesting – near wetlands, lakes, rivers; on cliffs, banks, mounds and human-made structures.	Known to occur within DNCR
Northern goshawk <i>Accipiter gentilis</i>	CSC	North coast, subalpine, upper montane coniferous forest	
Northern spotted owl <i>Stix occidentalis caurina</i>	FT, CSC	Old-growth forest or mixed stands of old-growth and mature trees. Occasionally in younger forests with patched of big trees.	Known to occur within DNCR

Species	Status	Habitat	Comments
Ruffed grouse <i>Bonasa umbellus</i>	CSC	Mixed deciduous and coniferous trees, often in dense canyon-bottom or stream-side growths.	Known to occur within DNCR
Marbled murrelet <i>Brachyramphus marmoratus</i>	FT, CE	Old-growth redwood dominated forests, up to six miles inland.	Known to occur within DNCR
Black swift* <i>Cypseloides niger</i>	CSC	Nests in colonies on cliffs behind or adjacent to waterfalls in deep canyons.	Known to occur adjacent to DNCR
Vaux's swift <i>Chaetura vauxia</i>	CSC	Nesting – Redwood, Douglas-fir and other coniferous forests. Nest in large hollow trees and snags often nests in flocks.	Known to occur within DNCR
Purple martin <i>Progne subis</i>	CSC	Nesting – low elevation coniferous forest and woodlands.	Known to occur within DNCR
Willow flycatcher <i>Emidonax traillii</i>	CE	Nesting – willow riparian thickets 2000-8000 elevation.	
Yellow warbler <i>Dendroica petechia brewsteri</i>	CSC	Nesting – riparian plant associations, such as willow, cottonwood, aspen and alders for nesting and foraging.	Known to occur within DNCR
Yellow-breasted chat <i>Icteria virens</i>	CSC	Nesting – summer resident, riparian vegetation.	Known to occur within DNCR
MAMMALS			
Silver-haired bat* <i>Lasionycteris noctivagans</i>	CSC	Coastal and montane forest. Roosts in hollow trees, beneath exfoliating bark, abandoned woodpecker holes, and rarely under rocks. Needs drinking water. Forages over streams ponds and brushy areas.	Known to occur within DNCR
Yuma myotis* <i>Myotis yumanensis</i>	CSC	Open forests and woodlands near bodies of water. Maternity colonies in caves, mines, buildings or crevices.	Known to occur within DNCR
Fringed myotis* <i>Myotis thysanodes</i>	CSC	Wide variety of habitats. Pinyon-juniper, valley foothill hardwood, and hardwood-conifer. Maternity colonies and roosts in caves, mines, buildings, or crevices.	Known to occur within DNCR
Sonoma(red) tree vole* <i>Arborimus pomo</i>	CSC	Northcoast fogbelt from Oregon border to Sonoma Co. Douglas fir, redwood, and montane hardwood-conifer forests. Forages almost exclusively on Douglas fir needles. Will occasionally feed on Grand fir, Hemlock, or Spruce.	Known to occur within DNCR
Humboldt marten* <i>Martes americana humboldtensis</i>	CSC	Redwood, Douglas-fir, late-successional coniferous forest. Prefers forest with low, overhead cover.	Known to occur adjacent to DNCR

Species	Status	Habitat	Comments
Pacific fisher* <i>Martes pennanti pacifica</i>	FT Candidate /CSC	Intermediate to large tree stage coniferous forests and deciduous-riparian areas with high canopy closure. Uses cavities, snags, logs, and rocky areas for cover and denning.	Known to occur within DNCR
INSECTS			
Mardon skipper* <i>Polites mardon</i>	FT Candidate	Known from western Washington state and extreme northwestern Del Norte Co. Northcoast coniferous forest	Known to occur adjacent to DNCR
MOLLUSCS			
Chace juga* <i>Juga chacei</i>	FT Candidate	Small permanent streams at low to middle elevations. Gravelly substrate, in cold, clear, highly oxygenated, unpolluted, running water	Known to occur adjacent to DNCR
FISH			
Coho salmon <i>Oncorhynchus kisutch</i>	FE, CE	Coastal waters and anadromous streams.	Known to occur within DNCR
Chinook Salmon <i>Oncorhynchus tshawytscha</i>	FT, CT	Coastal waters and anadromous streams.	Known to occur within DNCR
Chum Salmon <i>Oncorhynchus keta</i>	CSC	Coastal waters and anadromous streams.	Known to occur within DNCR
Summer-run Steelhead trout* <i>Oncorhynchus mykiss irideus</i>	FT	Coastal waters and anadromous streams.	Known to occur within DNCR
Coastal cutthroat trout* <i>Oncorhynchus clarkii clarkii</i>	CSC	Small low gradient coastal streams from Eel river to Oregon border. Need shaded streams with small gravel and water temp <18C	Known to occur within DNCR
River lamprey <i>Lampetra ayresi</i>	CSC	Klamath / Smith river watersheds	Known to occur within DNCR

FE – Federally Endangered, FT – Federally Threatened, SE – State Endangered, ST – State Threatened, CSC – California species of Special Concern

*listed CNDDDB

APPENDIX D – RESTORATION PLAN

**Mill Creek Watershed
Young Forest Restoration Plan
Del Norte Coast Redwoods State Park**



North Coast Redwoods District

April 2011

Prepared by Lathrop Leonard

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MILL CREEK WATERSHED YOUNG FOREST RESTORATION PLAN

1. INTRODUCTION

This restoration-based silvicultural project proposes to promote forest health and accelerate the development of the old-growth conditions that were present before European settlement. This will be accomplished by mechanically thinning (using chainsaws) approximately 941 hectares (2,325 acres) of formerly harvested stands initiated after 1992. The stands to be thinned have much higher than natural tree densities and a far greater proportion of Douglas-fir trees than under historic conditions. The failure to act quickly in these areas will inhibit the ability of these areas to develop late-successional forest characteristics in a timely manner and increase catastrophic fire occurrences.

2. LOCATION

The project is located within the North Coast Redwoods District of California State Parks. The proposed work would take place in portions of Mill Creek, Rock Creek, Wilson Creek, Hunter Creek, and Turwar Creek watersheds within Del Norte Coast Redwoods State Park (DNCRSP) (Figures 1-4, Appendix A). This area is generally referred to as the Mill Creek Watershed (MCW) and was added to the Park in 2002. DNCRSP lies in the coastal mountains of northwestern Del Norte County, approximately 8 km (5 mi) southeast of Crescent City.

The legal description for the project area is: T 15 N, R 1 W, Section 1; T 15 N, R 1 E Sections 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 35, 36; T 15 N, R 2 E, Sections 7, 18, 19, 30, 31; T 16 N, R 1 W, Section 36; and T 16 N, R 1 E, Sections 26, 27, 28, 29, 31, 32, 33, 34, 35, 36, Humboldt Meridian; USGS 7.5' Child's Hill, CA and Hiouchi, CA quadrangles. Access to the proposed project area from Eureka is via Highway 101 north. The main access to the restoration areas, Hamilton Road, is located 3 km (2 mi) north of the Mill Creek Campground on Highway 101.

3. BACKGROUND AND NEED FOR THE PROJECT

The MCW has experienced logging operations since the early part of the 20th century and was intensively managed for timber production from the 1950's until the Save-the-Redwoods League facilitated the property's transfer to California State Parks (CSP) in June of 2002. By that time, almost the entire property had been converted from old-growth to young coniferous forests. There are about 40 ha (100 ac) of old-growth redwood and Douglas-fir forests that remain in the MCW today. The State's primary goal for the forested areas is to accelerate the restoration of late-successional characteristics and protect salmonids.

The General Plan for DNCRSP (amended in 2011) identifies the need to assess the conditions of the youngest stands - areas planted from 1994-2000 - in order to determine which areas need treatment to maintain optimal growth and to prioritize areas for treatment. CSP used records obtained from the former landowner - Stimson Timber Company - to identify stands in this age class. Remote sensing - satellite imagery and a canopy height model created from a 2007 Light Detection and Ranging (LiDAR) flight - was used to look for errors in the records and ensure all stands in this age class were considered for treatment. All areas identified in this process were then visited to determine if they were forested or naturally open chaparral habitat. Over 700

Mill Creek Watershed Young Forest Restoration Plan

points were systematically placed over the forested stands. All points were surveyed using variable and fixed radius plots and initial data analysis is complete.

Survey results of trees over 4 cm (1.5") diameter at breast height (dbh) show that 93 stands totaling 903 ha (2,262 ac) have over 202 trees per hectare (tph) (500 trees per acre (tpa)). Old-growth redwood forests by comparison average around 13 tph (32 tpa) (Guisti 2004). The trees in stands with over 202 tph (500 tpa) have (or will shortly) form closed canopies and will lose a large portion of their crown foliage to shading from neighboring trees. As the crowns of these trees shrink so does their ability to grow quickly even if more resources are made available by removing competing vegetation. Untreated stands may even stagnate and forest health could be compromised. By failing to manage these forests immediately, the growth of all trees may slow and delay the development of late-successional conditions by decades.

This project proposes to reduce tree densities within the 941 ha (2,325 ac) of forest that survey results show have more than 202 tph (500 tpa). There are an additional 19 ha (63 ac) where competing brush threatens to reduce tree densities below levels necessary for the rapid development of late-seral characteristics. This project proposes to cut brush to release trees these 19 ha. A map of all stands to be treated will be compared to the road decommissioning schedule to help prioritize restoration. Stands will then be chosen for thinning each year based on if and when access would become more difficult, how much access would be affected, the number of trees per acre within each stand and the stand's overall degree of impairment. Other factors such as adjacency to older stands or riparian areas and biological and geological considerations will also be used to prioritize treatment.

4. OBJECTIVES

The primary goal of the restoration treatments is to protect Park resources by promoting forest health and to accelerate the development of late-seral forest characteristics in these formerly harvested stands. Within this framework, there are four major objectives:

- Accelerate growth and crown vigor of selected trees
- Develop fire resistant traits of large conifers
- Adjust species composition to promote historic species mix

5. IMPLEMENTATION

Restoration activities will be conducted by contract crews using chain saws. Work will generally occur during the dry period (July 1 - Oct 31), but work may carry on as conditions allow. All vehicles will be restricted to maintained roads that are sufficiently dry that ruts will not be created and will be in conformance with the Redwood National and State Parks Seasonal Road Use Policy. (Appendix B).

5.1. GENERAL PRESCRIPTION

Smaller trees that are restricting the growth of neighboring "larger" coniferous trees will be thinned. The selection of focal trees to release will be based on choosing the largest, healthiest tree of the appropriate species to shift stand composition towards pre-logging conditions. Prescriptions will use variable density thinning as the primary tool for expediting the creation of late-successional forest characteristics and promote historic species

Mill Creek Watershed Young Forest Restoration Plan

composition. Variable density thinning encourages natural forest development by promoting uneven spacing between trees (Carey 2003, Carey et al. 1999, O'Hara et al. 2010). The prescriptions for this project will create widely spaced trees (as compared to traditional thins) in pockets scattered throughout the stand. The wide spacing will also prevent or delay the stand from entering the stem exclusion (or competitive exclusion) stage of stand development. This stage is characterized by low levels of biodiversity within the stand and slowed progress towards the development of late successional characteristics (Franklin et al. 2002, Oliver and Larson 1996).

Interspersed among the areas with fewer trees will be clumps where higher tree densities will be retained. High-density areas will add to the heterogeneity of tree spacing and increase the complexity of the forest as a whole. Trees in the clumps will grow more slowly, thereby adding to the variety of tree sizes within a stand.

On average, stands will have a minimum of 185 tph (75 tpa) retained after treatment and most stands will have at least 370 tph (150 tpa) retained. No trees larger than 38 cm (15 in) in diameter at breast height (dbh) will be cut and rarely will trees larger than 25 cm (10 in) be cut as few trees are present in that size class. All chain saw operators must be able to distinguish between Douglas-fir, redwood, grand fir, tanoak, and other hardwoods. Felled trees will be lopped and left where felled.

Examples of the types of prescriptions that are likely to be used include spacing residual trees on either a 4.9 m x 4.9 m (16 ft x 16 ft) or 6.1 m x 6.1 m (20 ft x 20 ft) spacing while allowing +/- 1.2 m (4ft) to choose the best tree (species, health and size). The resulting tree densities are approximately 420 tph (170 tpa) and 269 tph (109 tpa) respectively. A third method that has been used in the past and may be implemented is known as the localized release prescription (Figures 7 and 8) and involves cutting all but three trees within a 7.6 m (25 ft) radius circle and placing subsequent circles adjacent to this circle. One tree is left between circles and diamond shaped areas between multiple circles are left untreated (Figures 7 and 8.). The resulting tree density is highly variable but is generally higher than the other two (average 516 tph (209 tpa) on stands treated to date).

No more than 800 acres will be treated within the Mill Creek or Rock Creek drainage in a given year and no treatment area will have more than 200 contiguous acres. No more than 50% of a sub-watershed will be treated in any year.

Mill Creek Watershed Young Forest Restoration Plan

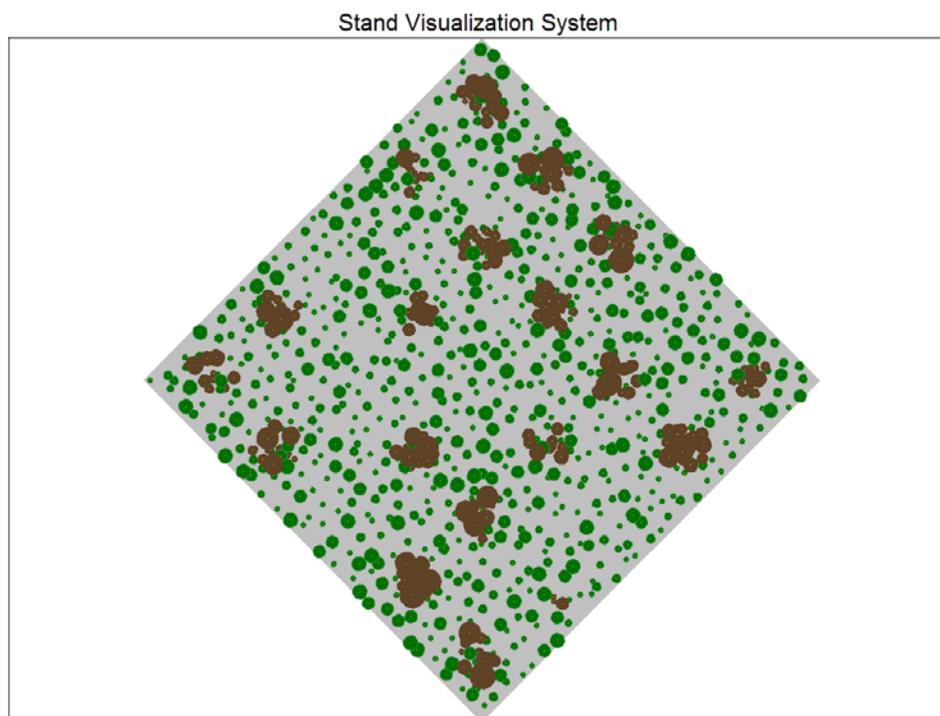


Figure 7. Sample stand with 1000 trees/acre before treatment (brown trees are redwood sprouts).

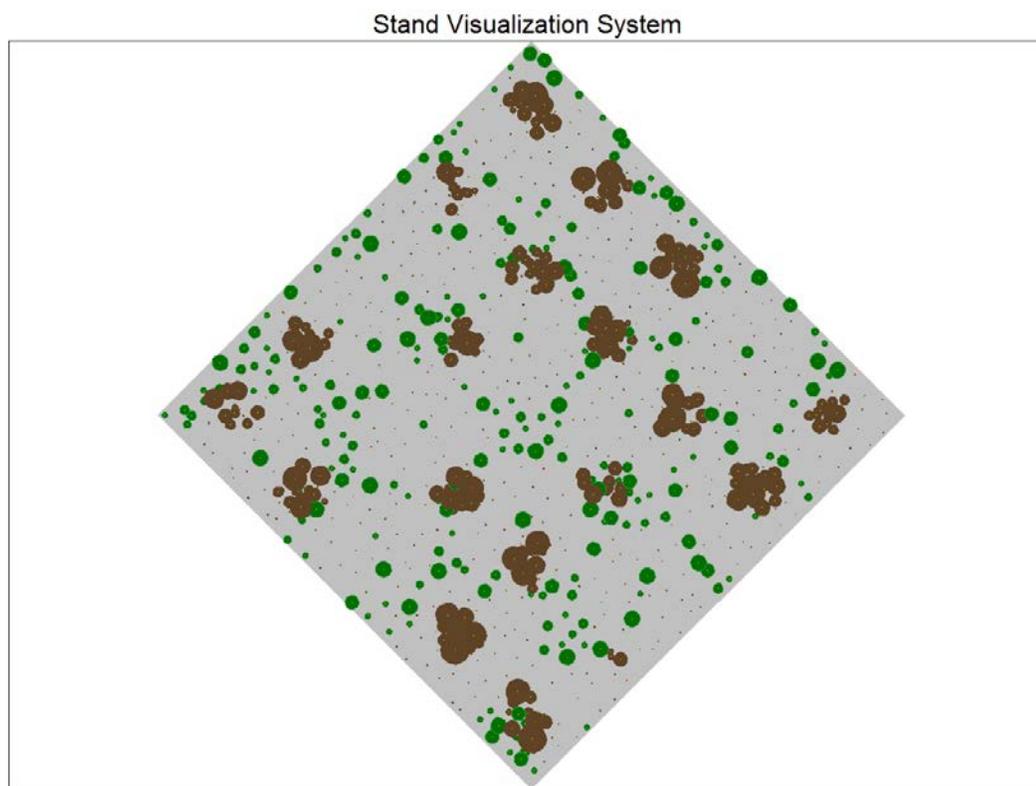


Figure 8. Sample stand after localized release treatment (417 trees/acre).

Mill Creek Watershed Young Forest Restoration Plan

5.2. TREATMENT OF SLASH AND STUMPS

- All cut trees will have their stumps cut to within 8 in of ground.
- Trees will be cut below lowest living branch OR all green branches will be removed from cut stumps.
- All felled trees will be brought to the ground, and will not be left suspended or hanging in crowns of other trees. Tree boles must be within 8 ft of the ground.
- No dead trees will be cut unless it poses a threat to worker safety. If a snag is cut leave as high of a stump as possible.
- Trees will be felled away from public and service roads (Multi Use Trails). If necessary to fell trees across these facilities then they will be immediately removed so that they do not restrict traffic or emergency vehicles.

5.3. RIPARIAN AND WETLAND PROTECTION MEASURES

- No operations will occur within 18 m (60 ft) of Class 1 watercourses as defined by the California Forest Practice Rules (waters that provide habitat for fish or within 30 m (100 ft) of a domestic water source).
- No operations will occur within 18 m (60 ft) of Class 2 watercourses as defined by the California Forest Practice Rules (waters that provide habitat for non-fish aquatic life). For the purposes of this plan, this will include seeps, springs, and wet areas.
- Trees will be felled away from riparian, Class 1 and Class 2 watercourses whenever possible.
- In the event that a tree accidentally falls into aquatic habitat, a CSP representative will be contacted to decide if the tree needs to be lopped and/moved to minimize the impact to the sensitive feature.
- All personnel working in or near riparian areas will minimize foot traffic within them.

5.4. FUEL REDUCTION ZONES

A fuel reduction zone will be applied to all restoration activities conducted within 8 m (25 ft) of Multi Use Trails (MUT - service roads). All down woody material ≤ 18 cm (7 in) dbh within 8 m (25 ft) of MUT or public roads will be pulled to the road and chipped or chipped with a masticator mounted to heavy equipment (like and excavator) but no motorized equipment may travel off of existing roads. Equipment must have adequate tires or tracks to prevent rutting or damaging roads. Chips will be distributed in the treatment area to a depth ≤ 13 cm (5 in).

5.5. OTHER REQUIREMENTS

- Several mass wasting sites occur within the project area. Mass wasting areas and other unstable slopes will not be treated and a minimum 3 m (10 ft) no treatment buffer will be established around them.
- All vehicles will be restricted to established roads.
- No vehicles will be allowed on roads that are sufficiently wet that ruts will be created by vehicle traffic.
- Traffic speed on unpaved roads will be limited to 15 miles per hour (mph).

Mill Creek Watershed Young Forest Restoration Plan

- If a contractor is used the contractor must have a designated crew foreman present at all times. The foreman must be able to speak English and communicate with crew.
- A set of fire tools be kept within 30 m (100 ft) of each saw team (2 individuals) during the fire season (fire season is designated by CalFire). A fire tool set will consist of an ABC fire extinguisher rated at 1A:10B: C or more.
- Smoking will be restricted within to a 2 m (10 ft) circle cleared of duff and litter.
- All gasoline-powered equipment will be maintained in good mechanical condition (according to manufacturer's specifications), and in compliance with all State and federal requirements.
- All equipment will be inspected for leaks immediately prior to the start of operations, and regularly inspected thereafter until equipment project is complete. Leaks that develop will be repaired immediately in the field or work with that equipment will be suspended until repairs are made.
- CSP will ensure that the equipment operators maintain a spill kit at the site throughout the life of the project. In the event of any spill or release of any chemical in any physical form on or immediately adjacent to the project sites or within the Park during operations, the contractor will immediately notify the appropriate CSP staff (e.g., project manager or supervisor). Appropriate agencies will be notified in the event of significant spillage.
- All workers within 15 M (50 ft) of operating chainsaws or chippers will be required to wear hearing protection.
- CSP staff and contractors will be required to park vehicles away from flammable material such as dry grass and brush.
- Park staff will be required to have a State Park radio on site, which allows direct contact to California Department of Forestry and Fire Protection and centralized dispatch center, to facilitate the rapid dispatch of control crews and equipment in case of a fire.
- No maintenance or fueling activities will be permitted within 30 M (100 ft) of a stream.
- The mechanized removal of downed material will be suspended when sustained winds exceed 25 mph, instantaneous gusts exceed 35 mph, or when dust from construction might obscure driver visibility on public roads.
- Construction activities will be limited to the hours between sunrise and sunset.

6. BEST MANAGEMENT PRACTICES

The following best management practices (BMP) will be applied to this project. These BMP's are intended to 1) identify sensitive resources so that appropriate conditions or mitigation measures can be applied to assure that the restoration plan does not result in significant adverse effects to the environment and 2) provide minimum standards for the protection of certain resources.

6.1. BIOLOGICAL

Botanical

- Prior to operations in an area botanical surveys will be conducted.
- Surveys will be conducted in conformance with California Department of Fish & Game Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and

Mill Creek Watershed Young Forest Restoration Plan

Endangered Plants and Natural Communities

(<http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/guideplt.pdf>).

Riparian and Wet Areas

- Prior to operations in an area surveys will be conducted to determine the presence of watercourses, seeps, springs, or wet areas (hereafter referred to as waters).
- No operations will occur within 60 feet of Class 1 or Class 2 watercourses as defined by the CA Forest Practice Rules.

Sudden Oak Death (SOD)

- Plants, plant parts, or other products of SOD hosts, created as part of forest restoration activities will not be moved outside of the infected area or park (currently no infected areas occur with DNCRSP).
- State Park staff can gather felled trees adjacent to public or MUT by hand for use as firewood in campgrounds within DNCRSP. However, if SOD monitoring indicates that the watershed within the restoration is occurring is infected by SOD then all plants, plant parts or other products including firewood cannot be collected.
- All equipment used for restoration activities (e.g. chain saws) will be cleaned and disinfected prior to transport to State Park lands.

6.2. CULTURAL

- Prior to operations in an area cultural resource surveys will be conducted by a CSP Archaeologist or qualified consultant or designee working under the direction of the CSP Archaeologist.
- A 5024 will be completed prior to operations in an area.
- In the event that previously unknown cultural resources (including but not limited to dark soil containing shell, bone, flaked stone, groundstone, or deposits of historic trash) are encountered during project construction by anyone, the project manager will put work on hold at that specific location and workers will redirect to other tasks. A CSP-qualified archaeologist will record and evaluate the find and work with the project manager to implement avoidance, preservation, or recovery measures as appropriate prior to any work resuming at that specific location.
- In the event that human remains are discovered, work will cease immediately in the area of the find and the project manager/site supervisor will notify a CSP qualified archaeologist. Any human remains and/or funerary objects will be left in place or returned to the point of discovery and covered with soil. The CSP Sector Superintendent or a CSP qualified archaeologist will notify the Humboldt County Coroner in accordance with §7050.5 of the California Health and Safety Code, the Native American Heritage Commission (NAHC), the Tribal Historic Preservation Officer (THPO) of the Bear River Band of Rohnerville Rancheria, and the Executive Director of the Intertribal Sinkyone Wilderness Council. If the coroner or a tribal representative determines that the remains represent Native American internment, the NAHC in Sacramento and/or tribe will be consulted to identify the Most Likely Descendent (MLD) and appropriate disposition of the remains. Work shall not resume in the area of the find until proper disposition is complete as part of PRC §5097.98.

Mill Creek Watershed Young Forest Restoration Plan

No human remains or funerary objects will be cleaned, photographed, analyzed, or removed from the site prior to determination.

- If it is determined the find indicates a sacred or religious site, the site will be avoided to the maximum extent practicable. Formal consultation with the State Historic Preservation Officer (SHPO) and review by the NAHC/tribal representatives will also occur as necessary to define additional site mitigation or future restrictions

6.3. GEOLOGICAL

A Professional Geologist shall assess and make geologic design recommendations for all treatment areas addressed by this document.

7. MONITORING

Two types of monitoring, compliance and effectiveness, may be carried out in conjunction with the activities proposed under the Young Forest Restoration Plan.

7.1. COMPLIANCE MONITORING

Compliance monitoring will occur during all phases of the implementation of the restoration plan. State Park Natural Resource personnel (inspectors) will accompany contractors during operations and will be responsible for assuring that all conditions and mitigations listed in this plan and the subsequent Mitigated Negative Declaration are adhered to. Inspectors will be required to complete daily activity logs documenting the work conducted by the contractors. If CSP determines that work is not in compliance then the contractors, project manager, and the Senior Environmental Scientist will be notified so that corrective measures can be taken. If problems continue, work will cease while the project is reevaluated and workers will be instructed on measures necessary to improve work standards. Persistent difficulties will result in termination of the contract.

Reports will be filed annually with CSP North Coast Redwoods District headquarters and will summarize the quality and quantity of work accomplished. Any difficulties regarding compliance with the terms of the Young Forest Restoration Project MND will be noted along with recommendations to improve future efforts.

7.2. EFFECTIVENESS MONITORING

In 2006, the Mill Creek Forest Monitoring Plan was developed to monitor the effectiveness of stands treated in the 1980- 1993 age class. A total of 60 permanent plots (15 in each prescription type and 15 in control areas with no treatment) have been established and will be periodically remeasured as needed to measure change. Plot design and implementation methods are outlined below. Stands treated under the Young Forest Restoration Project are similar in condition to the 1980-1993 stands when they were treated, therefore additional monitoring plots will not be required for this project unless prescriptions that are significantly different from those already being monitored are implemented or the sample size is determined to be inadequate to compare prescriptions for the purpose of improving future restoration efforts.

Forest Monitoring Plan

A system of randomized permanent monitoring plots has been established in three prescriptions (discussed in 5.1) and controls within forests similar to what is being treated under this plan. The plots are designed to compare the prescriptions' effects on tree growth, mortality, ingrowth, fuel loading and habitat over time.

The monitoring plan will test several working hypotheses regarding stand development as affected by the early-age restoration prescriptions. At the end of the monitoring period (or before as needed), the data will be analyzed to accept or reject each working hypothesis. As appropriate, new working hypotheses will be generated to test assumptions based on new information.

Working Hypotheses

1. (*Growth*): Average tree diameters are largest in the most heavily thinned plots.
2. (*Composition*): Changes in the composition of dominant and co-dominant tree species are the largest in the most heavily thinned plots.
3. (*Mortality*): Overall tree mortality (mostly from competition) will be highest in the control. Mortality due to bear damage and wind throw will be inversely related to tree density, but will not exceed 50% in any prescription.
4. (*Ingrowth*): The densities of ingrowth (trees <1.5" dbh) are higher in prescription plots with larger residual densities.
5. (*Ingrowth*): The growth rate of basal area will level sooner (lower average slope) for ingrowth (trees <1.5" dbh) than for retained trees during the monitoring period.
6. (*Fuels*): The residence time of surface fuels is inversely related to post treatment stand densities.
7. (*Habitat*): Canopy openness is inversely related to the density of retained trees. California Wildlife Habitat Relationship (CWHR) habitat elements are more conducive to late-successional wildlife species in treated areas compared to untreated controls.

Sampling Design

Three plots will be randomly placed in each of the treatment types so that all plots are at least 15 m (50 ft) away from all roads, other plots and stand boundaries.

Plots will consist of a 0.25 ha (0.6 ac) fixed plot (or 0.08 ha (0.2 ac) for controls) where all trees over 7.5 cm (3 in) dbh will be measured (Figure 9). One 10 m x 10 m (33' x 33') subplot will be put at each of the four corners where trees 1.4 m (4.5 ft) tall to 10 cm (4 in) dbh will be tallied. Finally, a 3 m x 3 m (10 ft x 10 ft) regeneration plot will be established in the central corner of each subplot where all trees between 45 cm (18 in) and 1.4 m (4.5 ft) tall will be tallied by species (Figure 9).

Plot corners will be permanently marked by hammering a piece of rebar into the ground and slipping a PVC pipe (1.5 m (5 ft) tall) over the top. The PVC will be labeled so plots can be identified in the future. Subplots will have one wire stake flag placed to mark the other three corners.

Mill Creek Watershed Young Forest Restoration Plan

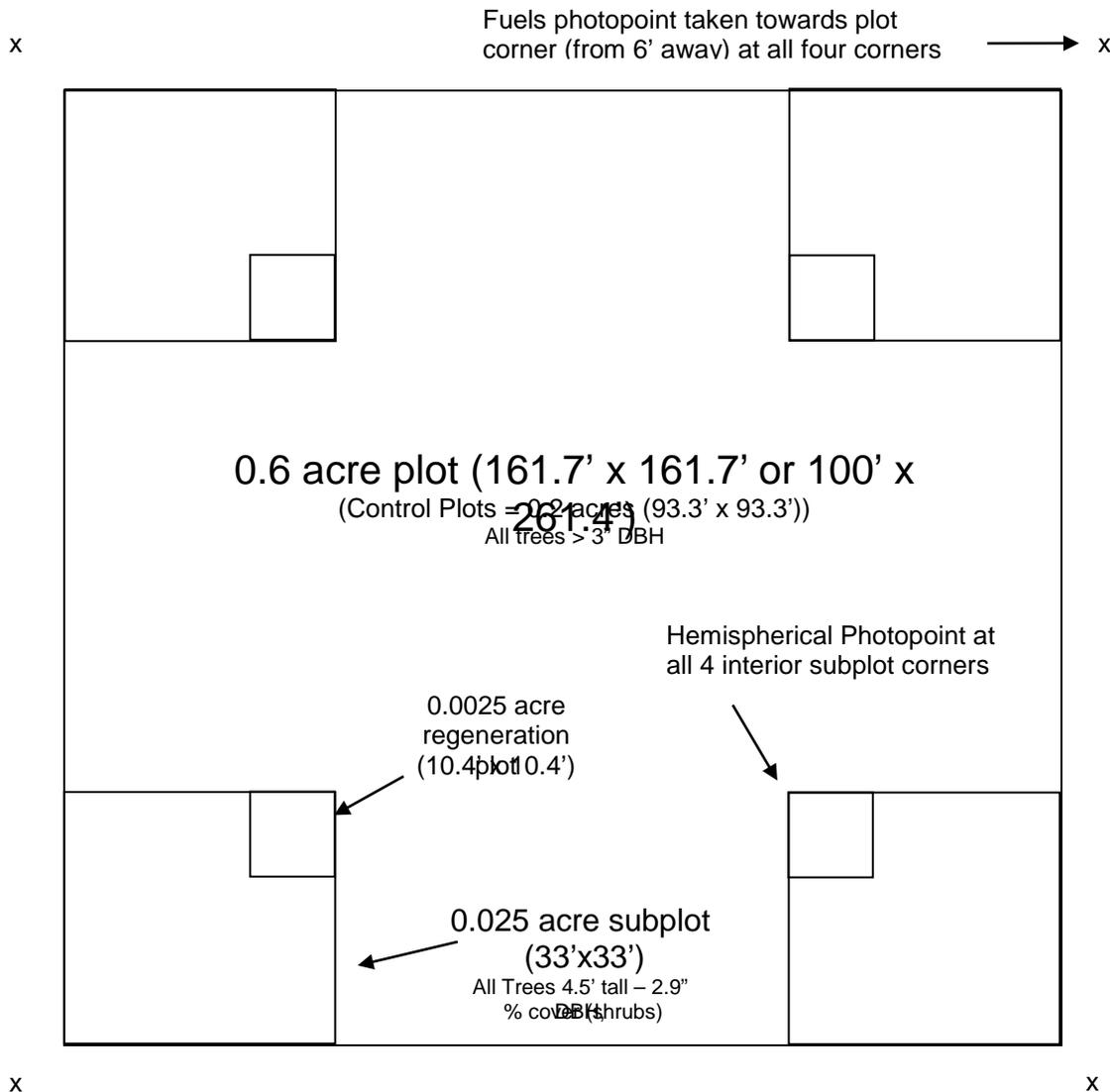


Figure 9. Plot design showing associated subplot locations.

Plot Measurements

0.25 ha Plots (or 0.08 acres for controls) - All trees 8 cm (3 in) dbh or larger will be tagged on the uphill side of the tree at breast height. Tree tagging and recording will be in a systematic order to aid in finding the tree in subsequent re-measures. Additional attributes such as height and damage will be recorded on a sub-sample of trees.

Subplots (10 m x 10 m) - All trees between 1.4 m (4.5 ft) tall and <8 cm (3 in) dbh will be tallied by 1" diameter class. All vegetation covering more than 5% of the subplot will be recorded by species, percent cover (to the nearest 5%), and the approximate height of the tallest branch of that species (multiple species on one plot may add up to more than 100% cover in the case of overlapping species). Total understory vegetation cover will also be recorded.

Regeneration Plots (3 m x 3 m) - All trees between 45 cm (18 in) and 1.4 m (4.5 ft) tall will be tallied by species.

Wildlife Habitat Measurements

Native trees, shrubs, plants and wildlife all respond to changing light conditions as the forest develops. Reliably documenting these changes is now possible using hemispherical canopy photography. Hemispherical canopy photography is an indirect optical technique that has been widely used in studies of canopy structure and forest light transmission. Photographs taken skyward from the forest floor with an 180° hemispherical (fisheye) lens produce circular images that record the size, shape and location of gaps in the forest overstory. Image processing software is used to classify individual pixels into either 'sky' or 'non – sky' classes and corresponding brightness values (Figure 10). These estimates are further analyzed to produce estimates of growing-season light transmission, leaf area and the frequency of small shafts of light (sun – flecks).

Hemispheric canopy photos will be taken from the corner of each subplot that is in the interior of the main plot to record light conditions during each monitoring cycle. Images will be processed using *Gap Light Analyzer (Version 2.0)* to calculate canopy openness values (inverse of canopy cover). The orientation of canopy gaps will be registered relative to retained trees to describe fine-scale patterns of ingrowth and lateral branch expansion over time. Hemispherical photos may be used in conjunction with CWHR habitat element data to refine species-habitat relationships for the MCW.

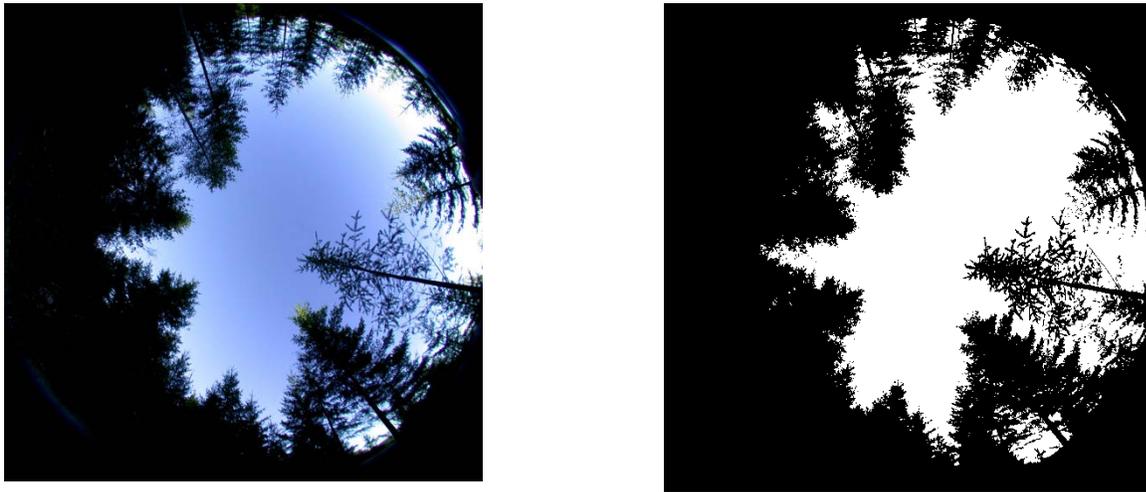


Figure 10. Hemispherical canopy photo (left) and processed image (right) of the First Gulch restoration site in 2005. The First Gulch site is ca. 16 years old and was thinned using a 16-ft x 16-ft ± 4-ft spacing (170 trees per acre). Post treatment canopy cover equals 57%.

Slash Measurements

Photos will be taken from six feet away from each plot corner looking diagonally back into the plot (Figure 9) so that the corner stake is in the photo and there will be a permanent record of slash depth.

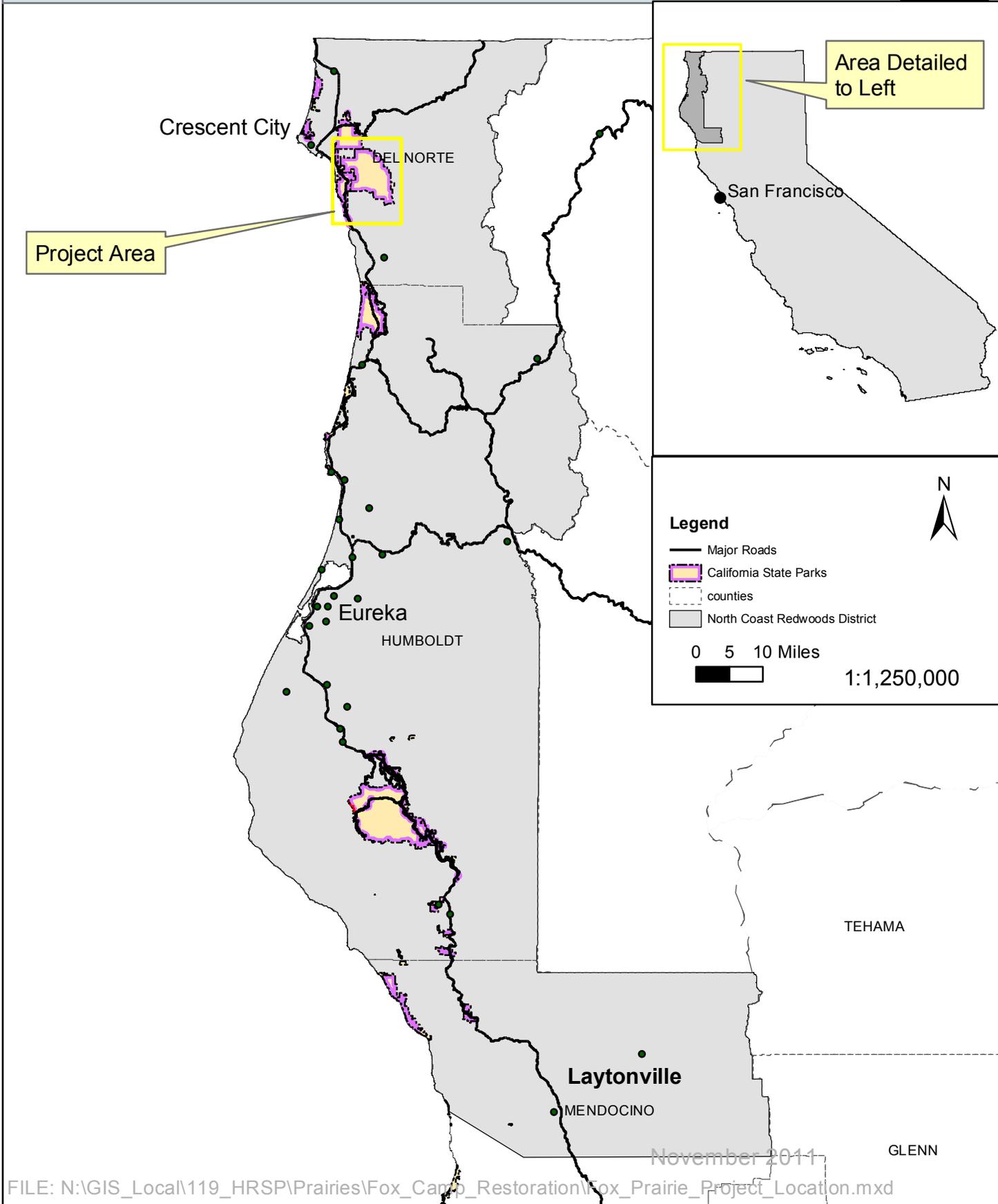
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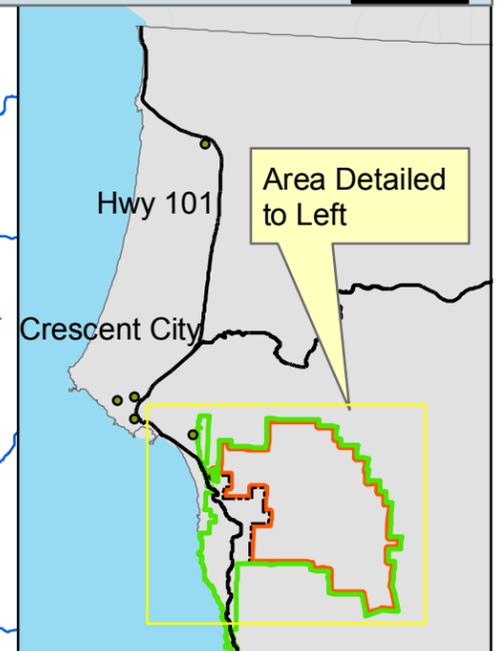
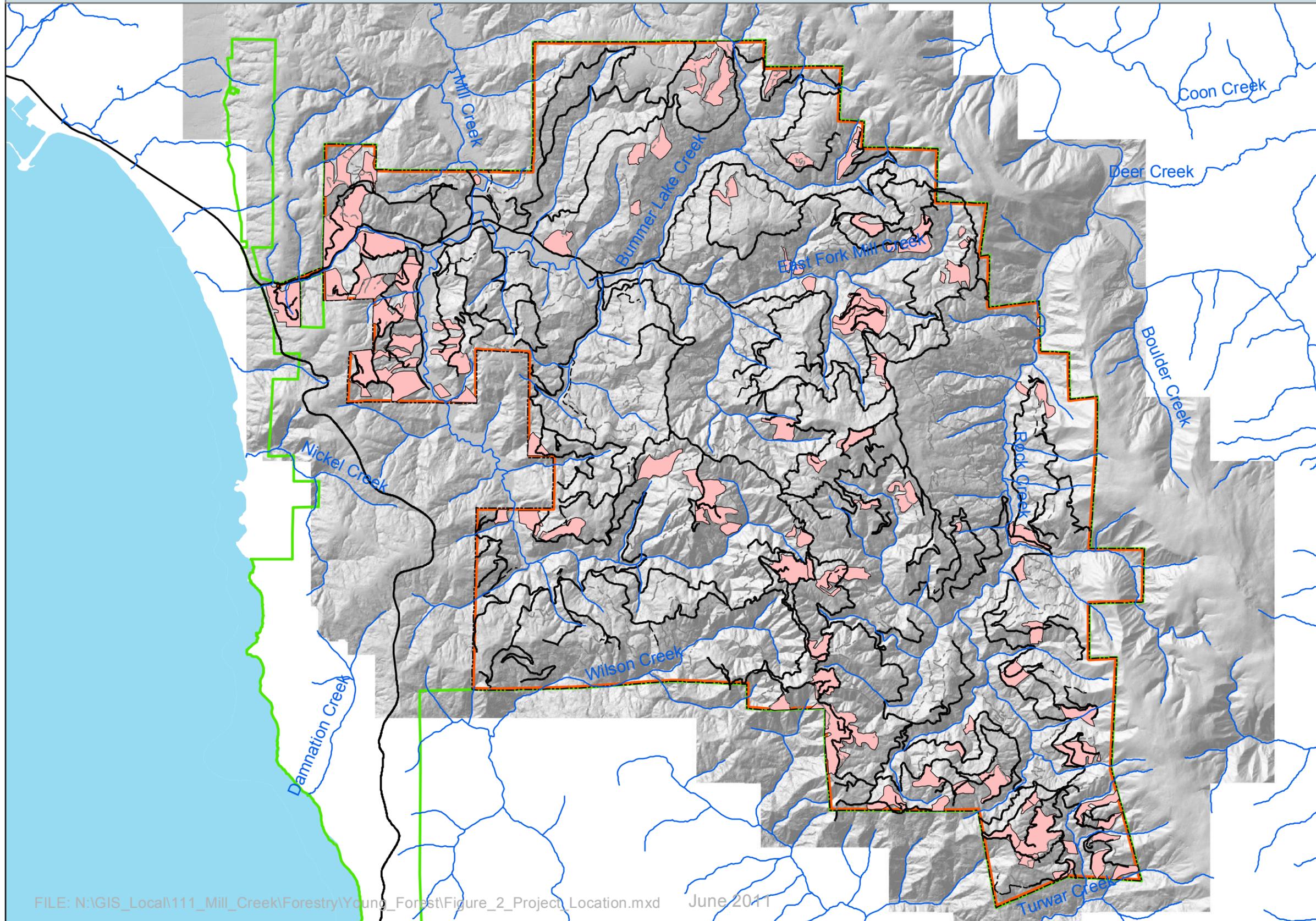
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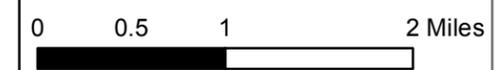
9. APPENDIX A – MAPS

Mill Creek Watershed Young Forest Restoration Plan





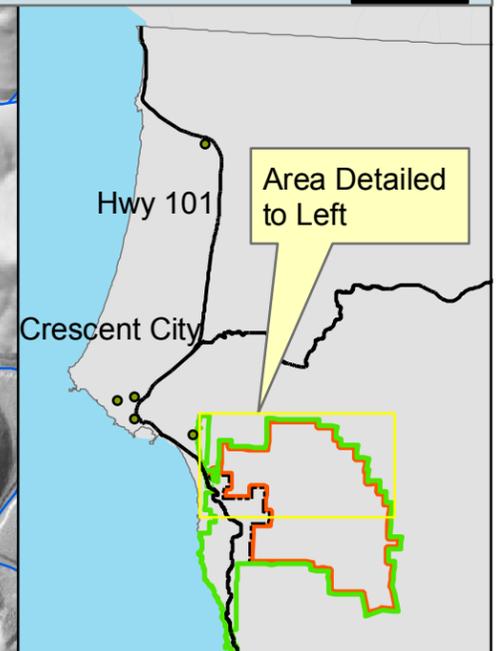
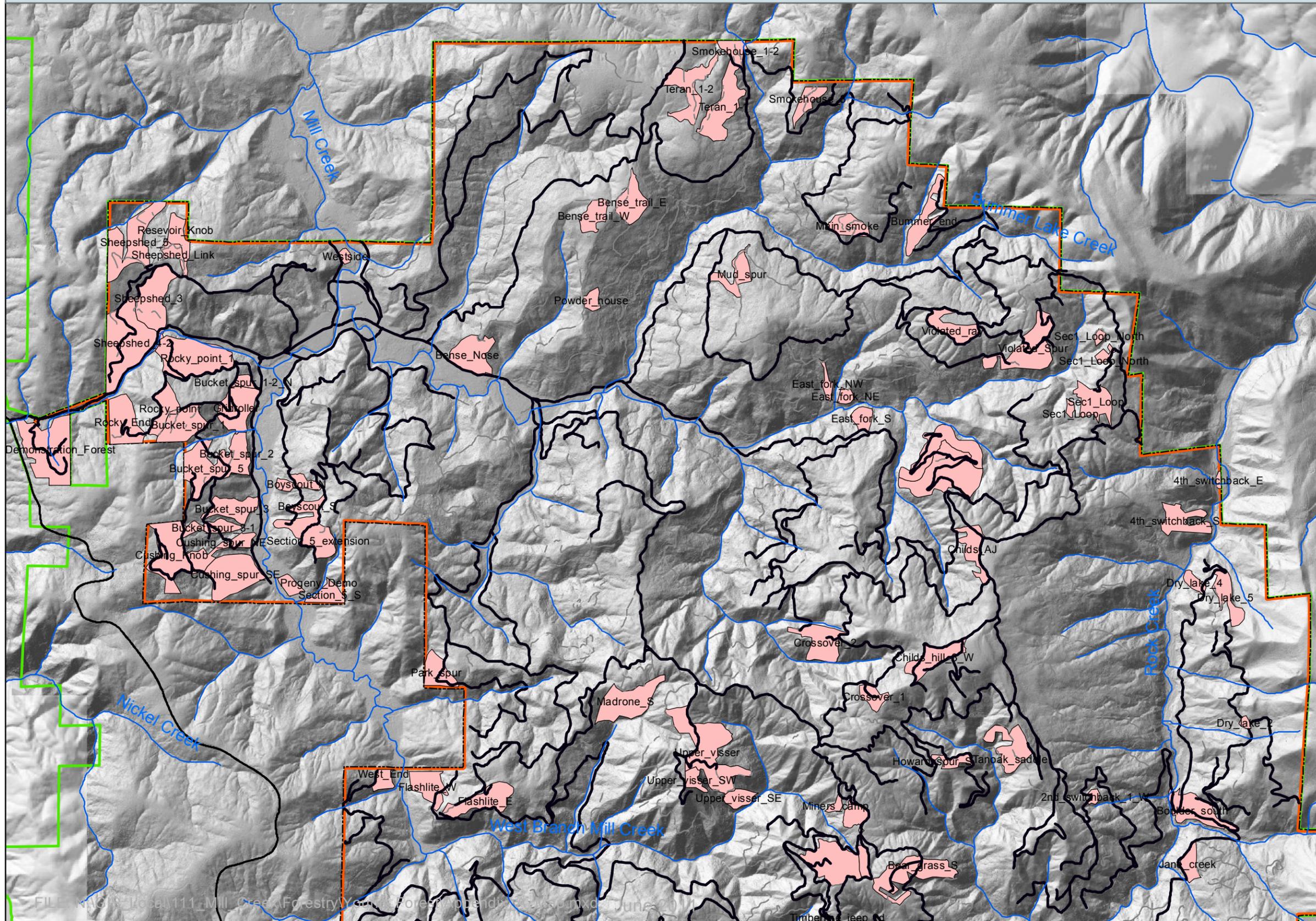
- Legend**
- Proposed Treatment Areas
 - Roads
 - Seasonal Roads
 - Other Roads
 - Streams
 - Del Norte Coast Redwoods State Park
 - Mill Creek Watershed Boundary



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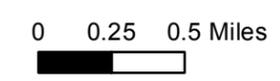


**Young Forest
Restoration Project
Figure 2 - Project Location**



Legend

- Streams
- Driveable Roads
- Not Driveable
- Proposed Treatment Areas
- Mill Creek Watershed Boundary
- Del Norte Coast Redwoods State Park

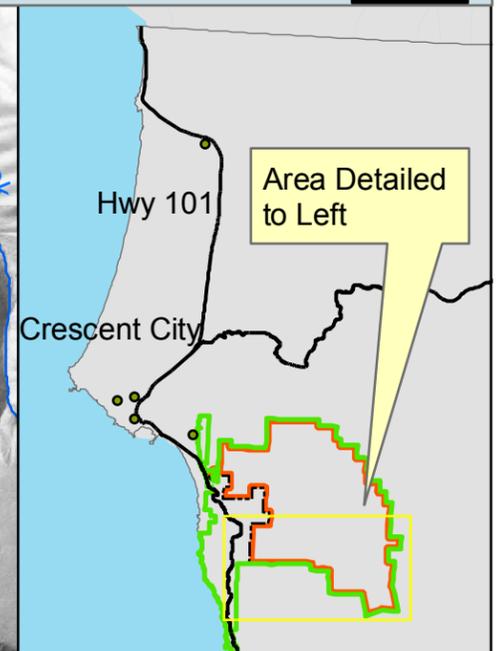
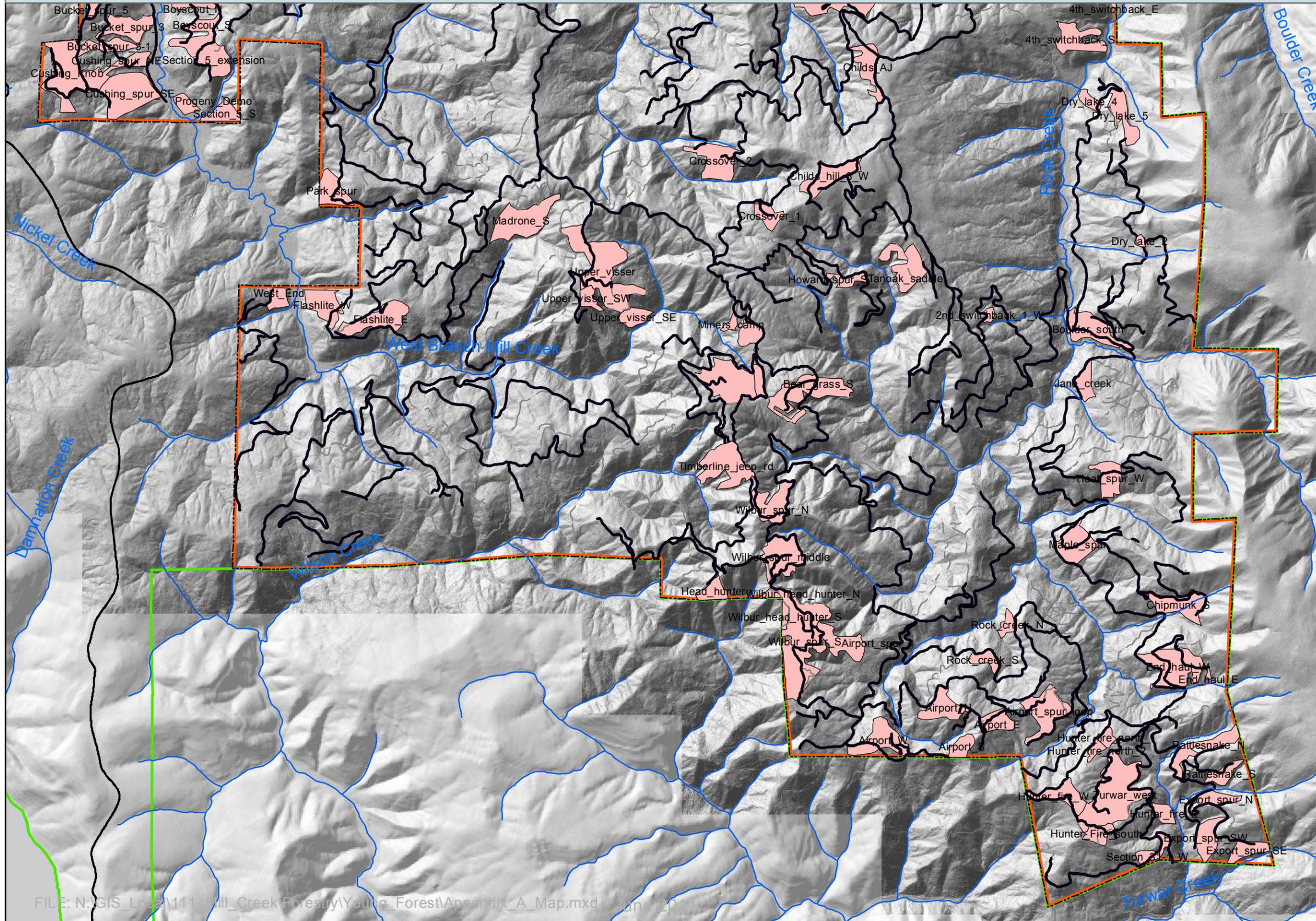


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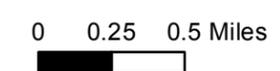
Young Forest Restoration Project
Figure 3a - Project Area Detail

FILE: \\GIS\Local\111_Mill_Creek\Forestry\... Forestry\... June 20...



Legend

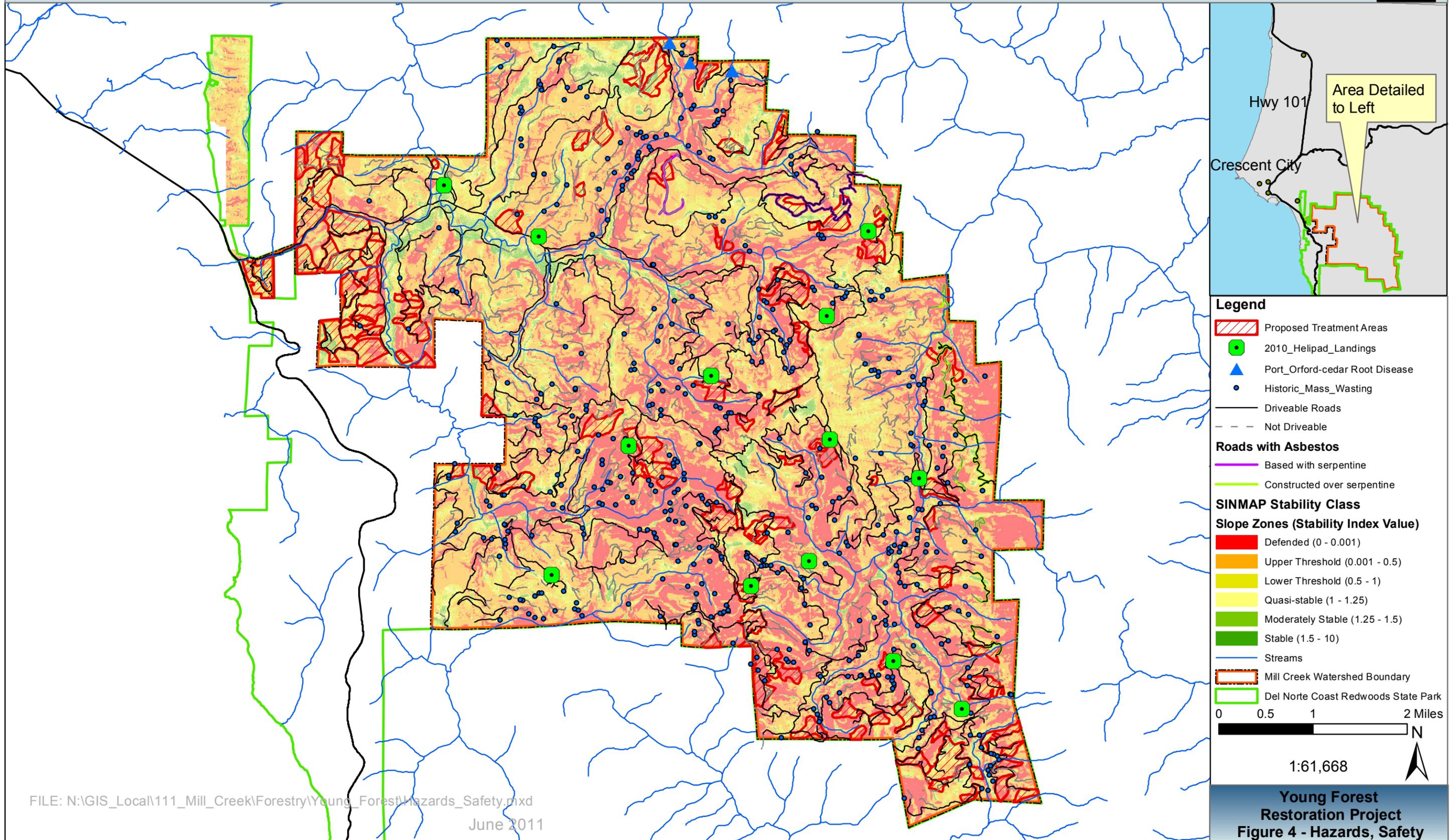
- Streams
- Driveable Roads
- - - Not Driveable
- Proposed Treatment Areas
- Mill Creek Watershed Boundary
- Del Norte Coast Redwoods State Park



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Young Forest Restoration Project
Figure 3b - Project Area Detail



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June 2011

Legend

- Proposed Treatment Areas
- 2010_Helipad_Landings
- Port_Orford-cedar Root Disease
- Historic_Mass_Wasting
- Driveable Roads
- Not Driveable

Roads with Asbestos

- Based with serpentine
- Constructed over serpentine

SINMAP Stability Class

Slope Zones (Stability Index Value)

- Defended (0 - 0.001)
- Upper Threshold (0.001 - 0.5)
- Lower Threshold (0.5 - 1)
- Quasi-stable (1 - 1.25)
- Moderately Stable (1.25 - 1.5)
- Stable (1.5 - 10)
- Streams
- Mill Creek Watershed Boundary
- Del Norte Coast Redwoods State Park

0 0.5 1 2 Miles

1:61,668

N

**Young Forest
Restoration Project
Figure 4 - Hazards, Safety**

10. APPENDIX B - SEASONAL ROAD USE POLICY



**United States Department of the Interior
California Department of Parks and Recreation**

Redwood National and State Parks

1111 Second Street
Crescent City, California 95531



D30

May 6, 2011

SUPERINTENDENTS' POLICY No. 1

To: All Employees

From: RNSP Superintendents

Subject: Seasonal Road Use in Redwood National and State Parks (RNSP)

SCOPE AND PURPOSE

The purpose of this Superintendents' Policy is to prevent damage to seasonal park roads from vehicle use during wet weather conditions, and to protect aquatic resources and water quality in park streams. This policy applies to all RNSP employees, volunteers, contractors and cooperators using non-public seasonal roads, as well as public use roads, within RNSP. Supervisors are responsible for ensuring that their employees, volunteers, contractors and cooperators are familiar with this policy.

BACKGROUND

All-season roads are constructed with gravel or paved surfaces. They have hardened surfaces and can be driven on with standard vehicles during all weather conditions. Seasonal roads are constructed with a surface consisting of native material that can deform and erode when conditions are too wet. Damage occurs through rutting which compromises the effectiveness of road surface drainage and allows runoff from precipitation to concentrate on the road surface and cause erosion. Erosion and sedimentation from roads impacts aquatic resources and water quality. Use of seasonal roads during wet weather conditions significantly increases road repair and maintenance costs.

POLICY

Seasonal roads in the park shall not be driven on with vehicles during the winter period or within 24 hours following rainfall greater than 0.5-inch that occurs outside of the winter period. Seasonal roads can be driven on by ATVs/UTVs providing ATV/UTV use does not deform or rut the road surface. RNSP employees or volunteers operating an ATV/UTV within the park shall abide by Safety Management Policy No. 14 *Use of All-Terrain Vehicles*. Emergencies are exempt from this policy. Emergencies are defined as medical assistance, search and rescues, law enforcement responses, fires and other immediate threats to the public or park resources.

The winter period is defined as October 15 through May 15 or the beginning of the prolonged stormy weather season to the beginning of the prolonged dry weather season on the North Coast. Seasonal road closures can occur before October 15 if sufficient precipitation has occurred, and seasonal closures can extend beyond May 15 if roads have not had sufficient time to dry. Similarly, seasonal road closures can occur after October 15 if the rainy season has not yet produced sufficient precipitation to warrant closures. The RNSP Superintendents or their designee(s) shall determine when seasonal roads are to be closed and re-opened.

As a general practice, vehicles driven on backcountry roads should have four-wheel drive capability. Tire chains shall not be used as a means to improve traction in order to gain access and should only be employed in emergencies or situations when extrication is not possible through mechanical assistance (e.g., winch, grip hoist, come-along, or towing by another vehicle).

List of RNSP All-Season Roads

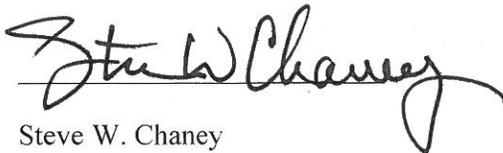
(All other roads in the parks not listed here, or identified on the maps, are considered Seasonal Roads.)

<u>Prairie Creek</u>	<u>West Side Redwood Creek</u>	<u>East Side Redwood Creek</u>
Geneva	A-9	C-line East
Holter Ridge	A-9-9	East Side Lookout
Holter Ridge	L-1 E & W)	K&K
North Skunk Cabbage	L-1-1 (Clay rd)	Robbers Gulch
Wolf Creek	L-line	Rock Quarry
Wolf Creek Fire Cache	L-2	Schoolhouse Peak
	L-2-2	Williams Ridge
	Old SOC	
	Rodger's Peak	
	West Side Access	
	Y-line	

North Roads (except for roads in Mill & Rock Creek Watersheds -- refer to map)

DeMartin Prairie	Hiouchi Fire Cache	Hiouchi Flat
Howland Hill	Howland Hill Outdoor School	Jed Trailer Pad Road
Pacamo Camp	Peacock Bar	Service N-1
Society Hole	Ginny Lane	Walker Rd End

Maps displaying all-season roads for RSNP North, RSNP South, and Mill Creek Watersheds are available on InsideREDW.



Steve W. Chaney
National Park Superintendent



Jeff Bomke
State Parks Superintendent